

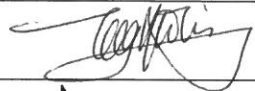
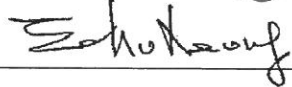
**China Harbour Engineering Company Limited**

Contract No. HY/2010/02

**Hong Kong – Zhuhai – Macao Bridge  
Hong Kong Boundary Crossing  
Facilities –  
Reclamation Works**

**Contract Specific EM&A Manual**

[04/2015]

	Name	Signature
Prepared & Checked:	Y T Tang	
Reviewed, Approved and Certified:	Echo Leong (ETL)	

Version:	Rev. 1	Date: 08 April 2015
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**Disclaimer**

This report is prepared for China Harbour Engineering Company Limited and is given for its sole benefit in relation to and pursuant to Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities-Reclamation Works and may not be disclosed to, quoted to or relied upon by any person other than China Harbour Engineering Company Limited without our prior written consent. No person (other than China Harbour Engineering Company Limited) into whose possession a copy of this report comes may rely on this report without our express written consent and China Harbour Engineering Company Limited may not rely on it for any purpose other than as described above.

<p>AECOM Asia Co. Ltd. 15/F, Grand Central Plaza, Tower 1, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong Tel: (852) 3922 9000 Fax: (852) 2317 7609 www.aecom.com</p>
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Ref.: HYDHZMBEEM00\_0\_2860L.15

8 April 2015

By Fax (3698 5999) and By Post

Engineer's Representative  
Ove Arup & Partners  
Chief Resident Engineer's Office  
5 Ying Hei Road, Tung Chung, Lantau, Hong Kong

Attention: Mr. Roger Marechal

Dear Sir,

**Re: Agreement No. CE 48/2011 (EP)  
Environmental Project Office for the  
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities,  
and Tuen Mun-Chek Lap Kok Link – Investigation**

**Contract No. HY/2010/02 HZMB HKBCF – Reclamation Works  
Contract Specific EM&A Manual (Rev. 1)**

Reference is made to the Environmental Team's submission of the Contract Specific EM&A Manual (Rev. 1) certified by the ET Leader (ET's ref.: "60249820/C/RMKY15040801" dated 8 April 2015) and provided to us via e-mail on 8 April 2015.

We are pleased to inform you that we have no adverse comment on the captioned Contract Specific EM&A Manual. We write to verify the captioned submission in accordance with Condition 1.9 of the Environmental Permit No. EP-353/2009/H and Condition 1.9 of Environmental Permit EP-354/2009/D (for TM-CLKL Southern Landfall Reclamation only).

The ET Leader and the Contractor are reminded that our verification to the captioned submission does not release any of the obligations as required by the applicable Environmental Permit(s) and/or Project EM&A Manual(s) approved by EPD.

Thank you very much for your kind attention and please do not hesitate to contact the undersigned should you have any queries.

Yours sincerely,



Raymond Dai  
Independent Environmental Checker

Encl.

c.c.	HyD	Mr. Matthew Fung	(By Fax: 3188 6614)
	HyD	Mr. Wai-ping Lee	(By Fax: 3188 6614)
	AECOM	Ms. Echo Leong	(By Fax: 2317 7609)
	CHEC	Mr. Lim Kim Chuan	(By Fax: 2578 0413)

Internal: DY, YH, SL, JM, ENPO Site

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Contract No. HY/2010/02

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Boundary Crossing Facilities – Reclamation Works

### Summary of Amendment of Contract Specific EM&A manual

S. 1.1.1 – S1.1.4	N.A.
S1.1.8, S1.1.9 and S1.1.12	Version of EP and issuing date were updated
S1.2.6	As some of the other environmental documents may have drawn reference to the Project Specific EM&A Manual, this Manual is renamed as Contract Specific EM&A Manual on September 2013 and replace the previous Project Specific EM&A Manual” was added to avoid any potential confusion.
S1.2.1, S1.2.2, S1.2.3, S1.2.6, S3.1.3.2 – 2 <sup>nd</sup> bullet, S3.1.3.3 – 1 <sup>st</sup> bullet and S16.2.2	As some of the other environmental documents may have drawn reference to the Project Specific EM&A Manual, this Manual is renamed as Contract Specific EM&A Manual on September 2013 and replace the previous Project Specific EM&A Manual” or the similar to avoid any potential confusion
S. 2.1.1	N.A.
Table 5.1 and Table 5.2	remarks “#Reference is made to EPD conditional approval of the omission of air monitoring station (AMS 6) for the project issued and became effective on19 November 2012.” was added to explain the amendment
S. 5.3.2	N.A.
S. 5.9.4	Supplemented mitigation measures stated in the S3.8 of TM-CLKL EM&A Manual.
Table 5.1 and Table 5.2	remarks ^Reference is made to ET’s proposal of relocation of AMS7 on 2 February 2015 and EPD’s memo dated on 05 February 2015 regarding the approval of ET’s proposal for relocating air monitoring station from AMS7 to AMS7A for Contract No. HY/2010/02. The aforesaid relocation was completed and AMS7A was effective since 5 February 2015.
S. 6.7.2	N.A.
S. 7.1.2	N.A.
Table 9.3	Reference is made to EPD approval of adjustment of water quality assessment criteria issued and became effective on 18 February 2013.
S9.11.2	Amended with reference to the latest EP and now became “Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, except for the sand blanket filling, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. The maximum daily filling rate of sand blanket shall be 24,000 m3. During the sand blanket placement”
S. 9.1.1	N.A.
S9.1.2-S9.1.4, S9.11.6	A site drainage management plan certified by the ET Leader and verified the IEC was submitted to EPD during the initial project commencement stage. Referred to the content of this submission and revised these sections accordingly to make tally with the BCF EM&A manual.
S9.4.1	Aligned the bullets in this sub-section and review all other subsections alignment for clarity.

Table 9.3	Reference is made to EPD approval of adjustment of water quality assessment criteria issued and became effective on 18 February 2013. Table 9.1 Events and Action Plan for Dolphin Monitoring was revised according to the latest revision.
S9.3.2	Made tally with the BCF EM&A manual
S9.4.1, S9.4.4 and S9.7.1	Made tally with the BCF EM&A manual
S9.7.3-9.7.5	N.A.
S9.9	Included title similar to BCF EM&A manual to keep format consistent.
S9.11.2	Amended with reference to the latest EP and now became "Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, except for the sand blanket filling, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. The maximum daily filling rate of sand blanket shall be 24,000 m <sup>3</sup> . During the sand blanket placement,"
S9.11.6	Site drainage plan is available during the commencement of project and revise accordingly.
S. 10.2.2	N.A.
S. 10.2.3	N.A.
S. 10.2.7 – S.10.2.8	Spill Response Plan has been submitted. This section has been reviewed and revised to tally with the BCF EM&A Manual.
S. 10.2.11	Checked which type of piling is applicable to contract and revised accordingly.
S. 10.2.12 – S10.2.16	N.A.
S. 10.2.25 – 10.2.27	N.A.
Table 10.2	Event and Action Plan for Dolphin Monitoring was revised according to the latest revision.
Table 10.3(a) and 10.3(b)	The Action and Limit levels for Chinese White Dolphin Monitoring are defined in Table 10.3(a) and 10.3(b). Should non-compliance of the criteria occur, action in accordance with the Action Plan in Table 10.2 shall be carried out.
Table 10.3(a)	Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL) and Table 10.3(b) Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring were added in S9.6
S. 10.3.2	Added remark – "This Contract involves impact monitoring of dolphins during construction phase only. The responsibility of post construction vessel-based dolphin monitoring (at least two years after the completion of construction works) will be assigned to relevant contract by the Authority in the later stage of the Hong Kong-Zhuhai-Macao Bridge project."
S. 10.4.1.2 – S.10.4.1.5	N.A.

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Hong Kong Boundary Crossing Facilities – Reclamation Works

S. 10.5.2 – S10.5.5	N.A.
S. 10.6.2 – S10.6.3	N.A.
S. 10.6.4	Added remark – “This Contract involves impact monitoring of dolphin during construction phase only. The responsibility of post construction dolphin monitoring will be assigned to relevant contract by the Authority in the later stage of the Hong Kong-Zhuhai-Macao Bridge project.”
S. 10.6.5	N.A.
S. 10.6.7	Added remark – “This Contract involves impact monitoring of dolphin during construction phase only. The responsibility of post construction dolphin monitoring will be assigned to relevant contract by the Authority in the later stage of the Hong Kong-Zhuhai-Macao Bridge project.”
S. 10.6.8	Added remark – “This Contract involves impact monitoring of dolphin during construction phase only. The responsibility of post construction dolphin monitoring will be assigned to relevant contract by the Authority in the later stage of the Hong Kong-Zhuhai-Macao Bridge project.”
S. 10.7.2 – 10.7.5 and 10.8.2	Added remark – “This Contract involves impact monitoring of dolphins during construction phase only. The responsibility of post construction dolphin monitoring will be assigned to relevant contract by the Authority in the later stage of the Hong Kong-Zhuhai-Macao Bridge project.”
Table 14.2	Mitigation measures of the project wide EM&A report which is applicable to the construction phase for HKBCF Reclamation Works was selected or added to table 14.2 in the contract specific EM&A Manual.
S.14.2.4 and 14.2.10	N.A.
Figure 2	Updated

Date: 24/03/2015

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## 1 INTRODUCTION

### 1.1 Background

1.1.1 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

#### **Hong Kong Link Road**

1.1.2 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

1.1.3 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

1.1.4 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

#### **Hong King Boundary Crossing Facility**

1.1.5 Contract No. HY/2010/02 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Work (here below, known as “the Project”) mainly comprises of about 130-hectare reclamation at the northeast of the Hong Kong International Airport of an area of about 130-hectare for the construction of an artificial island for the development of the Hong Kong Boundary Crossing Facilities (HKBCF), and about 19-hectare for the southern landfall of the Tuen Mun - Chek Lap Kok Link (TMCLKL).

1.1.6 Subsequent to EIA Study Brief of TMCLKL being prepared and based upon the proposed schemes for the Hong Kong-Zhuhai-Macao Bridge (HZMB) and HKBCF, it was decided to integrate the TMCLKL southern landfall reclamation with the HKBCF reclamation. It was considered that this arrangement would also provide a cost-effective connection between the HKBCF and North Lantau.

1.1.7 The environmental impact assessment (EIA) reports (Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities – EIA Report (Register No. AEIAR-145/2009) (HKBCFEIA) and Tuen Mun – Chek Lap Kok Link – EIA Report (Register No. AEIAR-146/2009) (TMCLKLEIA), and their environmental monitoring and audit (EM&A) Manuals (original EM&A Manuals), for the Project were approved by Environmental Protection Department (EPD) in October 2009.

1.1.8 EPD subsequently issued the Environmental Permit (EP) for HKBCF in November 2009 (EP-353/2009) and the Variation of Environmental Permit (VEP) in June 2010 (EP-353/2009/A), November 2010 (EP-353/2009/B), November 2011 (EP-353/2009/C), March 2012 (EP-353/2009/D), October 2012 (EP-353/2009/E), April 2013 (EP-353/2009/F), August 2013 (EP-353/2009/G) and January 2015 (EP-353/2009/H). Similarly, EPD issued the Environmental Permit (EP) for TMCLKL in November 2009 (EP-354/2009) and the Variation of Environmental Permit (VEP) in December 2010 (EP-354/2009/A), January 2014 (EP-354/2009/B), December 2014 (EP-354/2009/C) and March 2015 (EP-354/2009/D).

1.1.9 The Project is a designated project and is governed by the current permits for the Project, i.e. the amended EPs issued on 19 January 2015 (EP-353/2009/H) and 13 March 2015 (EP-354/2009/D) (for TMCLKL Southern Landfall Reclamation only).

1.1.10 China Harbour Engineering Company Limited (CHEC) was awarded by Highways Department as the Contractor to undertake the construction work.

1.1.11 AECOM Asia Co. Ltd. (AECOM) was appointed by China Harbour Engineering Company Limited to undertake the role of Environmental Team for the Project.

1.1.12 This Manual is submitted to fulfill the requirement as stated in the Clause 25.30 (7) of the Particular Specification and to include all project-relation contents from the original EM&A Manuals for the Project. This would help to facilitate compliance with the EPs (EP-353/2009/H and EP-354/2009/D (only for TMCLKL southern landfall reclamation)) and for work contracts administration.

#### **Project Description**

1.1.13 The Project comprises of seawall construction and reclamation works at the northeast waters off the Airport Island to provide land platform (about 130ha of area) for the construction of an artificial island

for the development of the boundary crossing facilities, and about 19-hectare for the southern landfall of the Tuen Mun - Chek Lap Kok Link.

1.1.14 The location of HKBCF and southern landfall reclamation for TMCLKL is given in Figure 1.

## 1.2 Purposes of the Manual

1.2.1 The purposes of this Contract Specific Environmental Monitoring and Audit (EM&A) Manual are to:

- Guide the set up of an EM&A programme to ensure compliance with the EIA recommendations;
- Specify the requirements for monitoring equipment;
- Propose environmental monitoring points, monitoring frequency etc.;
- Propose Action/Limit Level; and
- Propose Event/Action Plan.

1.2.2 This Contract Specific EM&A Manual outlines the monitoring and audit programme for the construction of the Project and provides systematic procedures for monitoring, auditing and minimising environmental impacts

1.2.3 Hong Kong environmental regulations and the Hong Kong Planning Standards and Guidelines (HKPSG) was served as environmental standards and guidelines in the preparation of this Contract Specific EM&A Manual. In addition, this Contract Specific EM&A Manual was prepared in accordance with the requirements stipulated in Annex 21 of the Technical Memorandum on the EIA Process (TM-EIAO) and the original EM&A Manuals.

1.2.4 This Manual contains the following information:

- Responsibilities of the Contractor, the Engineer or Engineer's Representative (ER), Environmental Team (ET), and the Independent Environmental Checker (IEC) under the context of EM&A;
- Role of the Environmental Protection Office (ENPO);
- Project organisation for the EM&A works;
- The basis for, and description of the broad approach underlying the EM&A programme;
- Details of the methodologies to be adopted, including all laboratories and analytical procedures, and details on quality assurance and quality control programme;
- The rationale on which the environmental monitoring data will be evaluated and interpreted;
- Definition of Action and Limit levels;
- Establishment of Event and Action plans;
- Requirements for reviewing pollution sources and working procedures required in the event of non-compliance with the environmental criteria and complaints; and
- Requirements for presentation of environmental monitoring and audit data and appropriate reporting procedures.

1.2.5 For the purpose of this manual, the ER shall refer to the Engineer as defined in the Construction Contract, in cases where the Engineer's powers was delegated to the ER, in accordance with the Construction Contract. The ET leader, who shall be responsible for and in charge of the ET, shall refer to the person delegated the role of executing the environmental monitoring and audit requirements.

1.2.6 This Manual is renamed as Contract Specific EM&A Manual on March 2014 and replace the previous Project Specific EM&A Manual



## **2 PROJECT DESCRIPTION**

### **2.1 Project Description**

#### **Hong Kong Link Road**

2.1.1 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

#### **Hong Kong Boundary Crossing Facilities**

2.1.2 The proposed HKBCF will comprise the following:

- i. Reclamation at the northeast waters off the Airport Island to provide land platform (about 130ha of area) for the development of the HKBCF,
- ii. Cargo processing facilities including kiosks for clearance of goods vehicles, customs inspection platform, X-ray buildings and related supporting facilities;
- iii. Passenger related facilities including processing kiosks and examination facilities for private cars and coaches, passengers clearance building and halls and related supporting facilities;
- iv. Accommodation for and facilities of the Government departments providing services in connection with the HKBCF;
- v. (Provision of transport and miscellaneous facilities inside the HKBCF including public transport interchange, transport drop-off and pick-up areas, vehicle holding areas, passenger queuing areas, road networks, footbridges, fencing, sewage and drainage systems, water supply system, utilities, electronic system, traffic control and information system and related supporting facilities;
- vi. Provision of road access for connection of the HKBCF to the HZMB HKLR, the TMCLKL and the Airport;
- vii. Reprovisioning of the affected Airport's facilities such as the existing FSD's East Sea Rescue Berth; and
- viii. Provision of other facilities for connection with the Airport such as an Automated People Mover system to connect the Airport Terminal with the HKBCF.

### **2.2 Implementation Programme**

2.2.1 Seawall construction and reclamation works of the HKBCF and the southern landfall of TMCLKL will be tentatively commenced in mid-March 2012 and will be completed by early 2016.

2.2.2 The tentative construction works programme, details of works areas and construction works sequence and reclamation layout and plan of the Project is annexed in Appendix A.

2.2.3 Detailed EIA assessments were conducted and presented in the relevant EIA reports. All necessary mitigation measures were identified and recommended in the original EM&A Manuals. The mitigation measures which are applicable to the Project were extracted from Environmental Mitigation Implementation Schedule in the original EM&A Manuals and are given in Appendix B. It specifies the extent, locations, time frame and responsibilities for the implementation of the environmental mitigation measures identified.

### **2.3 Concurrent Projects During Construction Phase**

- 2.3.1 Construction of HZMB Hong Kong Link Road (HKLR) and TMCLKL to be commenced in Year 2012 and scheduled to open in Year 2016 for HKLR and in Year 2017 for TMCLKL in matching the commissioning date of HKBCF.
- 2.3.2 The Main Bridge of the HZMB within the Guangdong water would also be concurrent with the construction of HKBCF and southern landfall of TMCLKL. The tentative commissioning date is also 2016.
- 2.3.3 Another concurrent project during the construction of HKBCF and southern landfall of TMCLKL is the 72 ha reclamation for Lantau Logistics Park. This has been considered as a concurrent project in the EIA.

### **3 PROJECT ORGANISATION**

#### **3.1 Project Organisation**

3.1.1 The proposed project organisation and lines of communication with respect to environmental protection works are shown in Appendix C.

3.1.2 The leader of the ET shall be an independent party from the Contractor and has relevant professional qualifications, and have at least 7 years of experience in conducting EM&A projects subject to approval of the Engineer's Representative (ER), Independent Environmental Checker (IEC) and EPD.

3.1.3 The responsibilities of respective parties are:

##### **3.1.3.1 The Contractor**

- employ an Environmental Team (ET) to undertake monitoring, laboratory analysis and reporting of environmental monitoring and audit;
- provide assistance to ET in carrying out monitoring and auditing;
- submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event and Action Plans;
- implement measures to reduce impact where Action and Limit levels are exceeded; and
- adhere to the agreed procedures for carrying out complaint investigation.

##### **3.1.3.2 Environmental Team (ET)**

- set up all the required environmental monitoring stations;
- monitor various environmental parameters as required in the Contract Specific EM&A Manual;
- analyse the environmental monitoring and audit data and review the success of EM&A programme to cost-effectively confirm the adequacy of mitigation measures implemented and the validity of the EIA predictions and to identify any adverse environmental impacts arising;
- carry out site inspection to investigate and audit the Contractors' site practice, equipment and work methodologies with respect to pollution control and environmental mitigation, and take proactive actions to pre-empt problems;
- audit and prepare audit reports on the environmental monitoring data and site environmental conditions;
- report on the environmental monitoring and audit results to the IEC, Contractor, the ER and EPD or its delegated representative;
- recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit levels in accordance with the Event and Action Plans; and
- undertake regular on-site audits/inspections and report to the Contractor and the ER of any potential non-compliance; and
- follow up and close out non-compliance actions.

##### **3.1.3.3 Engineer or Engineer's Representative (ER)**

- supervise the Contractor's activities and ensure that the requirements in the Contract Specific EM&A Manual are fully complied with;
- inform the Contractor when action is required to reduce impacts in accordance with the Event and Action Plans;
- employ an IEC to audit the results of the EM&A works carried out by the ET; and
- comply with the agreed Event Contingency Plan in the event of any exceedance.

#### 3.1.3.4 Independent Environmental Checker (IEC)

- review the EM&A works performed by the ET (at not less than monthly intervals);
- audit the monitoring activities and results (at not less than monthly intervals);
- report the audit results to the ER and EPD in parallel;
- review the EM&A reports (monthly and quarterly summary reports) submitted by the ET;
- review the proposal on mitigation measures submitted by the Contractor in accordance with the Event and Action Plans;
- check the mitigation measures that have been recommended in the EIA and this Manual, and ensure they are properly implemented in a timely manner, when necessary; and
- report the findings of site inspections and other environmental performance reviews to ER and EPD.

#### 3.1.3.5 Environmental Protection Office (ENPO)

Notwithstanding the above, given that the Tuen Mun - Chek Lap Kok Link (TMCLKL), HKBCF and HKLR will be constructed concurrently, an Environmental Protection Office (ENPO) or equivalent to oversee the cumulative construction projects in North Lantau area will be established by the Project Proponent. The responsibility of the ENPO would be similar to that of the IEC but should also include:

- coordinate the monitoring and auditing works for all the on-going projects in the area in order to identify possible sources/causes of exceedances and recommend suitable remedial actions where appropriate;
- review cumulative impacts including possible sources/causes of exceedance and recommending suitable remedial actions;
- liaise with the mainland project teams for HZMB Main Section to identify and assess any cross-boundary cumulative impacts in order to establish suitable remedial actions where necessary; and
- coordinate the assessment and response to complaints/enquires from locals, green groups, district councils or the public at large.

The exact responsibilities and organisation of the ENPO have been defined by the Project Proponent in accordance with the relevant Environmental Permits.

3.1.4 Sufficient and suitably qualified professional and technical staff shall be employed by the respective parties to ensure full compliance with their duties and responsibilities, as required under the EM&A programme for the duration of the Project.

3.1.5 The ET Leader shall have at least 7 years of experience in conducting EM&A for infrastructure projects. His qualification shall be vetted by the ER and the IEC.

## **4 ENVIRONMENTAL SUBMISSION**

### **4.1 Introduction**

4.1.1 The Contractor shall prepare the Environmental Management Plan (EMP) (including a Waste Management Plan), Construction Method Statement and obtain approval from ER, IEC, EPD and other relevant authorities to encompass the recommended environmental protection / mitigation measures with respect to their latest construction methodology and programme.

### **4.2 Environmental Management Plan**

4.2.1 A systematic EMP shall be set up by the Contractor to ensure effective implementation of the mitigation measures, monitoring and remedial requirements presented in the EIA, EM&A and EMIS. The ER and the IEC will audit the implementation status against the EMP and advise the necessary remedial actions required. These remedial actions shall be enforced by the ER through contractual means.

4.2.2 The EMP will require the Contractor (together with its sub-contractors) to define in details how to implement the recommended mitigation measures in order to achieve the environmental performance defined in the Hong Kong environmental legislation and the EIA documentation.

4.2.3 The review of on-site environmental performance shall be undertaken by ER and IEC through a systematic checklist and audit once the construction commences. The environmental performance review programme comprises a regular assessment on the effectiveness of the EMP. Reference should be made to ETWBTC 19 / 2005 “Environmental Management on Construction Sites” or its latest versions, and any other relevant Technical Circulars.

### **4.3 Waste Management Plan**

4.3.1 As part of the EMP, the Contractor shall include a WMP for the construction of the project in accordance with the ETWB TC(W) No. 19/2005 and submit to the ER, IEC and EPD for approval before the commencement of the construction of the Project. Where waste generation is unavoidable, the opportunities for recycling or reusing should be maximised. If wastes cannot be recycled, recommendations for appropriate disposal routes should be provided in the WMP. A method statement for stockpiling and transportation of the excavated materials and other construction wastes should also be included in the WMP and approved before the commencement of construction. All mitigation measures arising from the approved WMP shall be fully implemented. In addition to the above, the WMP should also included the following:

- Waste management policy;
- Record of generated waste;
- Waste reduction target;
- Waste reduction programme;
- Role and responsibility of waste management team;
- Benefit of waste management;
- Reuse, recycling and disposal plans;
- Analysis of waste materials; and
- Monitoring and action plan.

4.3.2 For the purpose of enhancing the management of Construction and Demolition (C&D) materials including rock, and minimising its generation at source, construction would be undertaken in accordance with the Environment, Transport and Works Bureau Technical Circular (Works) No. 33/2002 - Management of Construction and Demolition Material Including Rock, or its latest versions. The management measures stipulated in the Technical Circular should be incorporated into the WMP.

### **4.4 Construction Method Statement**

4.4.1 In case the Contractor would like to adopt alternative construction methods or implementation schedules, it is required to submit details of methodology and equipment to the ER for approval before the work commences. Any changes in construction method shall be reflected in a revised EMP or the Contractor will be required to demonstrate the manner in which the existing EMP should

accommodate the proposed changes. The Contractor may need to apply for a Further Environmental Permit (FEP) from EPD before commencement of any construction activities.

## 5 AIR QUALITY

### 5.1 Air Quality Parameters

- 5.1.1 Monitoring and audit of the TSP levels shall be carried out by the ET to ensure that any deteriorating air quality could be readily detected and timely action taken to rectify the situation.
- 5.1.2 One-hour and 24-hour TSP levels should be measured to indicate the impacts of construction dust on air quality. The 24-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B. Upon approval of the IEC, 1-hour TSP levels can be measured by direct reading methods which are capable of producing comparable results as that by the high volume sampling method, to indicate short event impacts.
- 5.1.3 All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and any other local atmospheric factors affecting or affected by site conditions, etc., shall be recorded down in detail. A sample data sheet is shown in Appendix D.

### 5.2 Monitoring Equipment

- 5.2.1 High volume samplers (HVSs) complying with the following specifications shall be used for carrying out the 1-hour and 24-hour TSP monitoring:
- 0.6 - 1.7 m<sup>3</sup> per minute adjustable flow range;
  - equipped with a timing / control device with +/- 5 minutes accuracy for 24 hours operation;
  - installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;
  - capable of providing a minimum exposed area of 406 cm<sup>2</sup>;
  - flow control accuracy: +/- 2.5% deviation over 24-hour sampling period;
  - equipped with a shelter to protect the filter and sampler;
  - incorporated with an electronic mass flow rate controller or other equivalent devices;
  - equipped with a flow recorder for continuous monitoring;
  - provided with a peaked roof inlet;
  - incorporated with a manometer;
  - able to hold and seal the filter paper to the sampler housing at horizontal position;
  - easily changeable filter; and
  - capable of operating continuously for a 24-hour period.
- 5.2.2 The ET is responsible for the provision, installation, operation, maintenance, dismantle of the monitoring equipment. They shall ensure that sufficient number of HVSs with an appropriate calibration kit is available for carrying out the baseline monitoring, regular impact monitoring and ad hoc monitoring. The HVSs shall be equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals. All the equipment, calibration kit, filter papers, etc., shall be clearly labelled.
- 5.2.3 Initial calibration of dust monitoring equipment shall be conducted upon installation and thereafter at bi-monthly intervals. The transfer standard shall be traceable to the internationally recognised primary standard and be calibrated annually. The concern parties such as IEC shall properly document the calibration data for future reference. All the data should be converted into standard temperature and pressure condition.
- 5.2.4 The flow-rate of the sampler before and after the sampling exercise with the filter in position shall be verified to be constant and be recorded in the data sheet as mentioned in Appendix D.
- 5.2.5 If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, he shall submit sufficient information to the IEC to prove that the instrument is capable of achieving a comparable

result to the HVS. The instrument should also be calibrated regularly, and the 1-hour sampling shall be determined periodically by the HVS to check the validity and accuracy of the results measured by direct reading method.

5.2.6 Wind data monitoring equipment shall also be provided and set up for logging wind speed and wind direction near the dust monitoring locations. The equipment installation location shall be proposed by the ET and agreed with the IEC. For installation and operation of wind data monitoring equipment, the following points shall be observed:

- a) The wind sensors should be installed 10 m above ground so that they are clear of obstructions or turbulence caused by buildings.
- b) The wind data should be captured by a data logger. The data shall be downloaded for analysis at least once a month.
- c) The wind data monitoring equipment should be re-calibrated at least once every six months.
- d) Wind direction should be divided into 16 sectors of 22.5 degrees each.

5.2.7 In exceptional situations, the ET may propose alternative methods to obtain representative wind data upon approval from the ER and agreement from the IEC.

### 5.3 Laboratory Measurement / Analysis

5.3.1 A clean laboratory with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments to handle the dust samples collected, shall be available for sample analysis, and equipment calibration and maintenance. The laboratory should be HOKLAS accredited.

5.3.2 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

5.3.3 Filter paper of size 8" x 10" shall be labelled before sampling. It shall be a clean filter paper with no pinholes, and shall be conditioned in a humidity-controlled chamber for over 24-hours and be pre-weighed before use for the sampling.

5.3.4 After sampling, the filter paper loaded with dust shall be kept in a clean and tightly sealed plastic bag. The filter paper shall then be returned to the laboratory for reconditioning in the humidity-controlled chamber followed by accurate weighing by an electronic balance with readout down to 0.1 mg. The balance shall be regularly calibrated against a traceable standard.

5.3.5 All the collected samples shall be kept in a good condition for 6 months before disposal.

### 5.4 Monitoring Locations

5.4.1 Figure 2 shows the locations of the proposed dust monitoring stations. The status and locations of dust sensitive receivers may change after issuing this manual. If such cases exist, the ET Leader shall propose updated monitoring locations and seek approval from ER and agreement from the IEC.

**Table 5.1 Construction Dust Monitoring Locations**

ID	Location
AMS 2	Tung Chung Development Pier
AMS 3B*	Site Boundary of Site Office Area at Works Area WA2
AMS 6 <sup>#</sup>	Dragonair/CNAC (Group) Building
AMS 7A <sup>^</sup>	Chu Kong Air-Sea Union Transportation Company Limited

<sup>#</sup>Reference is made to ET's proposal of the omission of air monitoring station (AMS 6) dated on 1 November 2012 and EPD's letter dated on 19 November 2012 regarding the conditional approval of the proposed omission of air monitoring station (AMS 6) for Contract No. HY/2010/02. The aforesaid omission of Monitoring Station AMS6 was effective since 19 November 2012.



\*Reference is made to ET's proposal of relocation of AMS3A on 24 October 2013 and EPD's letter dated on 06 January 2014 regarding the approval of ET's proposal for relocating air monitoring station from AMS3A to AMS3B for Contract No. HY/2010/02. The aforesaid relocation was completed and AMS3B was effective since 29 Jan 14.

^Reference is made to ET's proposal of relocation of AMS7 on 2 February 2015 and EPD's memo dated on 05 February 2015 regarding the approval of ET's proposal for relocating air monitoring station from AMS7 to AMS7A for Contract No. HY/2010/02. The aforesaid relocation was completed and AMS7A was effective since 5 February 2015.

5.4.2 When alternative monitoring locations are proposed, the proposed site should, as far as practicable:

- a) be at the site boundary or such locations close to the major dust emission source;
- b) be close to the sensitive receptors; and
- c) take into account the prevailing meteorological conditions.

5.4.3 The ET shall agree with the ER in consultation with the IEC on the position of the HVS for the installation of the monitoring equipment. When positioning the samplers, the following points shall be noted:

- a) a horizontal platform with appropriate support to secure the samplers against gusty wind should be provided;
- b) no two samplers should be placed less than 2 meters apart;
- c) the distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler;
- d) a minimum of 2 meters of separation from walls, parapets and penthouses is required for rooftop samplers;
- e) a minimum of 2 meters separation from any supporting structure, measured horizontally is required;
- f) no furnace or incinerator flue is nearby;
- g) airflow around the sampler is unrestricted;
- h) the sampler is more than 20 meters from the dripline;
- i) any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring;
- j) permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
- k) a secured supply of electricity is needed to operate the samplers.

5.4.4 The ENPO may, depending on site conditions and monitoring results, decide whether additional monitoring locations shall be included or any monitoring locations could be removed/relocated during any stage of the construction phase.

## 5.5 Baseline Monitoring for Fugitive Dust

5.5.1 Baseline monitoring shall be carried out at all of the designated monitoring locations (see Table 5.1) for at least 14 consecutive days prior to the commissioning of major construction works to obtain daily 24-hour TSP samples. The selected baseline monitoring stations should reflect baseline conditions at the impact stations. One-hour sampling should also be done at least 3 times per day while the highest dust impact is expected.

5.5.2 During the baseline monitoring, there should not be any major construction or dust generation activities in the vicinity of the monitoring stations. Before commencing baseline monitoring, the ET shall inform the IEC of the baseline monitoring programme such that, if required, the IEC can conduct on-site audit to ensure accuracy of the baseline monitoring results.

5.5.3 In case the baseline monitoring cannot be carried out at the designated monitoring locations, the ET Leader shall carry out the monitoring at alternative locations that can effectively represent the

baseline conditions at the impact monitoring locations. The alternative baseline monitoring locations shall be approved by the ER and agreed with the IEC.

- 5.5.4 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET shall liaise with the IEC and EPD to agree on an appropriate set of data to be used as a baseline reference and submit to ER for approval.
- 5.5.5 Ambient conditions may vary seasonally and shall be reviewed once every three months. When the ambient conditions have changed and a repeat of the baseline monitoring is required to be carried out for obtaining the updated baseline levels, the monitoring should be at times when the Contractor's activities are not generating dust, at least in the proximity of the monitoring stations. Should change in ambient conditions be determined, the baseline levels and, in turn, the air quality criteria, should be revised. The revised baseline levels and air quality criteria should be agreed with the IEC and EPD.

## 5.6 Impact Monitoring for Fugitive Dust

- 5.6.1 The ET shall carry out impact monitoring during the entire construction period. For regular impact monitoring, the sampling frequency of at least once in every 6 days, shall be strictly observed at all the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least 3 times in every 6 days should be undertaken when the highest dust impact occurs. Before commencing impact monitoring, the ET shall inform the IEC of the impact monitoring programme such that the IEC can conduct on-site audit to ensure accuracy of the monitoring results.
- 5.6.2 The specific time to start and stop the 24-hour TSP monitoring shall be clearly defined for each location and be strictly followed by the ET.
- 5.6.3 In case of non-compliance with the air quality criteria, more frequent monitoring, as specified in the Action Plan in the following section, shall be conducted within the specified timeframe after the result is obtained. This additional monitoring shall be continued until the excessive dust emission or the deterioration in air quality is rectified, and agreed with the ER and the IEC.

## 5.7 Action / Limit Levels

- 5.7.1 The baseline monitoring results form the basis for determining the air quality criteria for the impact monitoring. The ET shall compare the impact monitoring results with air quality criteria set up for 24-hour TSP and 1-hour TSP. Table 5.2 shows the air quality criteria, namely Action and Limit levels to be used.

**Table 5.2 Action / Limit Levels for Air Quality**

Parameters	Location	Action	Limit
24-hour TSP Level	AMS2	176 µg/m <sup>3</sup>	260µg/m <sup>3</sup>
	AMS3B*	167 µg/m <sup>3</sup>	
	AMS6 <sup>#</sup>	173 µg/m <sup>3</sup>	
	AMS7A <sup>^</sup>	183 µg/m <sup>3</sup>	
1-hour TSP Level	AMS2	374 µg/m <sup>3</sup>	500 µg/m <sup>3</sup>
	AMS3B*	368 µg/m <sup>3</sup>	
	AMS6 <sup>#</sup>	360 µg/m <sup>3</sup>	
	AMS7A <sup>^</sup>	370 µg/m <sup>3</sup>	

Remarks:

\*Action Level set out at AMS3 Ho Yu College is adopted.

<sup>#</sup>Reference is made to EPD conditional approval of the omission of air monitoring station (AMS 6) for the project issued and became effective on 19 November 2012.

<sup>\*</sup>Reference is made to ET's proposal of relocation of AMS3A on 24 October 2013 and EPD's letter dated on 06 January 2014 regarding the approval of ET's proposal for relocating air monitoring station from AMS3A to AMS3B for Contract No. HY/2010/02. The aforesaid relocation was completed and AMS3B was effective since 29 Jan 14.

<sup>^</sup>Reference is made to ET's proposal of relocation of AMS7 on 2 February 2015 and EPD's memo dated on 05 February 2015 regarding the approval of ET's proposal for relocating air monitoring station from AMS7 to AMS7A for Contract No. HY/2010/02. The aforesaid relocation was completed and AMS7A was effective since 5 February 2015.

## 5.8 Event and Action Plan

- 5.8.1 Should non-compliance of the air quality criteria occur, actions in accordance with the Action Plan in Table 5.3 shall be carried out.

**Table 5.3 Event / Action Plan for Air Quality**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
<b>ACTION LEVEL</b>				
Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform IEC and ER;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice;</li> <li>2. Amend working methods if appropriate.</li> </ol>
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC and ER;</li> <li>3. Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>4. Repeat measurements to confirm findings;</li> <li>5. Increase monitoring frequency to daily;</li> <li>6. Discuss with IEC and Contractor on remedial actions required;</li> <li>7. If exceedance continues, arrange meeting with IEC and ER;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>5. Supervise Implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit proposals for remedial to ER within 3 working days of notification;</li> <li>2. Implement the agreed proposals;</li> <li>3. Amend proposal if appropriate.</li> </ol>
<b>LIMIT LEVEL</b>				
Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> </ol>

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	2. Notify Contractor; 3. Ensure remedial measures properly implemented.	2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	monitoring.			

## 5.9 Mitigation Measures

- 5.9.1 The EIA Report has recommended dust control measures including 8 times of watering per day. During the operation of the barging facilities, good site practices such as road surface paving, dust enclosures, wheels wash facilities would be implemented to reduce the generation of dust.
- 5.9.2 All the proposed mitigation measures are summarised in the Environmental Mitigation Measures Implementation Schedule (EMIS) in Appendix B.
- 5.9.3 The Contractor shall, to the satisfaction of the Engineer, install effective dust suppression measures and take such other measures as may be necessary to ensure that at the site boundary and any nearby sensitive receiver, dust levels are kept to acceptable levels.
- 5.9.4 Mitigation measures for southern landfall of the Tuen Mun - Chek Lap Kok Link (TMCLKL)
- 5.9.4.1 The EIA report has recommended dust control and mitigation measures. The Contractor shall be responsible for the design and implementation of the following measures. The recommended construction dust mitigation measures are summarised in the Air Quality Environmental Mitigation Implementation Schedule provided in Appendix B.
- (i) all unpaved roads/exposed area shall be watered which results in dust suppression by forming moist cohesive films among the discrete grains of road surface material. An effective watering programme of twice daily watering with complete coverage, is estimated to reduce by 50%. This is recommended for all areas in order to reduce dust levels to a minimum;
  - (ii) watering of the construction area 8 times per day is recommended to reduce dust emissions by 87.5% and shall be undertaken;
  - (iii) The Contractor shall, to the satisfaction of the Engineer, install effective dust suppression measures and take such other measures as may be necessary to ensure that at the Site boundary and any nearby sensitive receiver, dust levels are kept to acceptable levels;
  - (iv) The Contractor shall not burn debris or other materials on the works areas;
  - (v) in hot, dry or windy weather, the watering programme shall maintain all exposed road surfaces and dust sources wet;
  - (vi) where breaking of oversize rock/concrete is required, watering shall be implemented to control dust. Water spray shall be used during the handling of fill material at the site and at active cuts, excavation and fill sites where dust is likely to be created;
  - (vii) open dropping heights for excavated materials shall be controlled to a maximum height of 2m to minimise the fugitive dust arising from unloading;
  - (viii) during transportation by truck, materials shall not be loaded to a level higher than the side and tail boards, and shall be dampened or covered before transport. Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards;
  - (ix) no earth, mud, debris, dust and the like shall be deposited on public roads. Wheel washing facility shall be usable prior to any earthworks excavation activity on the site;

(x) areas of exposed soil shall be minimised to areas in which works have been completed shall be restored as soon as is practicable; and

(xi) all stockpiles of aggregate or spoil shall be enclosed or covered and water applied in dry or windy condition.

5.9.4.2 If the above measures are not sufficient to restore the air quality to acceptable levels upon the advice of the ET, the Contractor shall liaise with the ET regarding other mitigation measures and consult the IEC for their effectiveness, and then propose these measures to the ER for approval prior to the implementation of the measures.



## 6 NOISE

### 6.1 Noise Quality Parameters

- 6.1.1 Construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (Leq).  $L_{eq30-min}$  shall be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays. For all other time periods,  $L_{eq5-min}$  shall be employed for comparison with the Noise Control Ordinance (NCO) criteria.
- 6.1.2 As supplementary information for data auditing, statistical results such as  $L_{10}$  and  $L_{90}$  shall also be obtained for reference. A sample data sheet is shown in Appendix D.

### 6.2 Monitoring Equipment

- 6.2.1 As referred to in the Technical Memorandum (TM) issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement, the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration level from before and after the noise measurement agrees to within 1.0 dB.
- 6.2.2 Noise measurements shall not be made in fog, rain, wind with a steady speed exceeding 5m/s or wind with gusts exceeding 10m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.
- 6.2.3 The ET is responsible for the provision, installation, operation, maintenance, dismantle of the monitoring equipment. He shall ensure that sufficient noise measuring equipment and associated instrumentation are available for carrying out the baseline monitoring, regular impact monitoring and ad hoc monitoring. All the equipment and associated instrumentation shall be clearly labelled.

### 6.3 Monitoring Locations

- 6.3.1 The locations of construction noise monitoring stations are summarised in Table 6.1 and shown in Figure 2.

**Table 6.1 Proposed airborne construction noise monitoring locations**

ID	Description
NMS2	Seaview Crescent Tower 1
NMS3B*	Site Boundary of Site Office Area at Works Area WA2

\*Reference is made to ET's proposal of relocation of NMS3A on 24 October 2013 and EPD's letter dated on 06 January 2014 regarding the approval of ET's proposal for relocating noise monitoring stations from NMS3A to NMS3B for Contract No. HY/2010/02. The aforesaid relocation was completed and AMS3B was effective since 29 Jan 2014.

- 6.3.2 When alternative noise monitoring location is proposed, the monitoring location shall be chosen based on the following criteria and the ET shall seek approval from ER and agreement from the IEC and EPD to the proposal of alternative monitoring location:
- at locations close to the major site activities which are likely to have noise impacts;
  - close to the most affected existing noise sensitive receivers; and
  - for monitoring locations located in the vicinity of the sensitive receivers, care should be taken to cause minimal disturbance to the occupants during monitoring.
- 6.3.3 The monitoring station shall normally be at a point 1 m from the exterior of the sensitive receiver building facade and be at a position 1.2m above the ground. If there is problem with access to the normal monitoring position, an alternative position may be chosen, and a correction to the measurements shall be made. For reference, a correction of +3 dB(A) shall be made to the free

field measurements. The ET shall agree with the IEC on the monitoring position and the corrections adopted. Once the positions for the monitoring stations are chosen, the baseline monitoring and the impact monitoring shall be carried out at the same positions.

- 6.3.4 The ENPO may, depending on site conditions and monitoring results, decide whether additional monitoring locations shall be included or any monitoring locations could be removed/relocated during any stage of the construction phase.

#### 6.4 Baseline Monitoring for Construction Noise

- 6.4.1 The ET shall carry out baseline noise monitoring prior to the commencement of the construction works. There shall not be any construction activities in the vicinity of the stations during the baseline monitoring. Continuous baseline noise monitoring for the A-weighted levels  $L_{eq}$ ,  $L_{10}$  and  $L_{90}$  shall be carried out daily for a period of at least two weeks in a sample period of 5 minutes or 30 minutes between 0700 and 1900, and 5 minutes between 1900 and 0700. A schedule on the baseline monitoring shall be submitted to the ER and IEC for approval before the monitoring starts.

- 6.4.2 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET shall liaise with the IEC and EPD to agree on an appropriate set of data to be used as a baseline reference and submit to the ER for approval.

#### 6.5 Impact Monitoring for Construction Noise

- 6.5.1 During normal construction working hour (0700-1900 Monday to Saturday), monitoring of  $L_{eq, 30-min}$  noise levels shall be carried out at the agreed monitoring locations once every week in accordance with the methodology in the TM.

- 6.5.2 If a school exists near the construction activity, noise monitoring shall be carried out at the monitoring stations for the schools during the school examination periods. The ET Leader shall liaise with the school's personnel and the Examination Authority to ascertain the exact dates and times of all examination periods during the course of the contract.

- 6.5.3 In case of non-compliance with the construction noise criteria, more frequent monitoring, as specified in the Action Plan, shall be carried out. This additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.

- 6.5.4 A schedule on the compliance monitoring shall be submitted to the ER and IEC for approval before the monitoring starts.

#### 6.6 Event and Action Plan for Construction Noise

- 6.6.1 The Action and Limit levels for construction noise are defined in Table 6.1. Should non-compliance of the criteria occur, action in accordance with the Action Plan shall be carried out.

**Table 6.2 Action and Limit Levels for Construction Noise**

Time Period	Action Level	Limit Level
0700 - 1900 hours on normal weekdays	When one documented complaint is received	75 dB(A) *

Note : If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

\* Reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

**Table 6.3 Event / Action Plan for Construction Noise**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> <li>1. Notify IEC and Contractor;</li> <li>2. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>3. Report the results of investigation to the IEC, ER and Contractor;</li> <li>4. Discuss with the Contractor and formulate remedial measures;</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the analysed results submitted by the ET;</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analysed noise problem;</li> <li>4. Ensure remedial measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to IEC;</li> <li>2. Implement noise mitigation proposals.</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Inform IEC, ER, EPD and Contractor;</li> <li>2. Identify source;</li> <li>3. Repeat measurements to confirm findings;</li> <li>4. Increase monitoring frequency;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analysed noise problem;</li> <li>4. Ensure remedial measures properly implemented;</li> <li>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still not under control;</li> <li>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

## **6.7 Mitigation Measures**

- 6.7.1 The EIA Report has recommended construction noise control measures including the use of quiet plant and temporary noise barriers. All the proposed mitigation measures are summarised in the EMIS in Appendix B.
- 6.7.2 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 6.7.3 Good site practices and noise management techniques to be implemented during construction phase:
- Use of site hoarding;
  - Use of movable noise barrier and full enclosure for relatively static plant;
  - Use of “quiet” plant and working methods;
  - Sequencing operation of construction plant equipment; and
  - Rescheduling to avoid noise construction works during school examination.

## **7 SEDIMENT QUALITY**

### **7.1 Summary**

- 7.1.1 The sediment quality data has been reviewed and the findings of the site investigation for sediment quality in relation to the current study area for HKBCF and TMCLKL is summarised in the EIA Report, there is no requirement on environmental monitoring and audit for sediment quality.
- 7.1.2 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

## **8 WASTE MANAGEMENT**

### **8.1 General**

- 8.1.1 The quantity and timing for the generation of waste during the construction phase should be estimated. Measures including the opportunity for on-site sorting, reusing excavated materials for reclamation etc, should be devised in the construction methodology to minimise the surplus materials to be disposed off-site. Proper disposal of chemical waste should be via a licensed waste collector. The records of quantities of waste generated, recycled and disposed (locations) should be properly documented.
- 8.1.2 All the proposed mitigation measures are stipulated in the EIA Report and summarized in the EMIS in Appendix B.
- 8.1.3 The types and quantities of waste that would be generated during the operational phase have been assessed. It is anticipated there would not be any insurmountable impact during operation phase. A trip-ticket system should be operated to monitor all movements of chemical wastes which will be collected by a licensed collector to licensed facility for final treatment and disposal.
- 8.1.4 Recommendations have been made to ensure proper treatment and proper disposal of these wastes in the EIA Report and summarised in the EMIS in Appendix B.
- 8.1.5 EM&A requirements are required for waste management during the construction phase only and the effective management of waste arising during the construction phase will be monitored through the site audit programme. The aims of the waste audit are:
- to ensure the waste arising from the works are handled, stored, collected, transferred and disposed of in an environmentally acceptable manner; and
  - to encourage the reuse and recycling of material.

### **8.2 Waste EM&A Requirements**

- 8.2.1 The Contractor shall be required to pay attention to the environmental standard and guidelines and carry out appropriate waste management and obtain the relevant licence/permits for waste disposal. The ET shall ensure that the Contractor has obtained from the appropriate authorities the necessary waste disposal permits or licences including:
- Chemical Waste Permits/licenses under the Waste Disposal Ordinance (Cap 354);
  - Public Dumping Licence under the Land (Miscellaneous Provisions) Ordinance (Cap 28);
  - Marine Dumping Permit under the Dumping at Sea Ordinance (Cap 466); and
  - Effluent Discharge Licence under the Water Pollution Control Ordinance.
- 8.2.2 The Contractor shall refer to the relevant booklets issued by the DEP when applying for the licence/permit and the ET shall refer to these booklets for auditing purposes.
- 8.2.3 During the site inspections and the document review procedures, the ET shall pay special attention to the issues relating to waste management and check whether the Contractor has followed the relevant contract specifications and the procedures specified under the laws of Hong Kong. In addition to the site inspections, the ET shall review the documentation procedures prepared by the Waste Coordinator once a week to ensure proper records are being maintained and procedures undertaken in accordance with the Waste Management Plan.
- 8.2.4 The Contractor's waste management practices should be audited with reference to the checklist detailed in Table 8.1 below:

**Table 8.1 Waste Management Checklist**

Activities	Timing	Monitoring Frequency	If non-compliance, Action Required
All necessary waste disposal permits or licences have been obtained.	Before the commencement of demolition works	Once	Apply for the necessary permits/ licences prior to disposal of the waste. The ET shall ensure that corrective action has been taken.
Only licensed waste hauliers are used for waste collection.	Throughout the works	Weekly	The ET shall inform the ER and IEC of the non-compliance. The ER shall instruct the Contractor to use a licensed waste haulier. The Contractor shall temporarily suspend waste collection of that particular waste until a licensed waste haulier is used. Corrective action shall be undertaken within 48 hours.
Records of quantities of wastes generated, recycled and disposed are properly kept. For demolition material/waste, the number of loads for each day shall be recorded (quantity of waste can then be estimated based on average truck load. Should landfill charging be implemented, the receipts of the charge could be used for estimating the quantity).	Throughout the works	Weekly	The Contractor shall estimate the missing data based on previous records and the activities carried out. The ET shall audit the results and forward to the ER and IEC for approval.
Wastes are removed from site in a timely manner. General refuse is collected on a daily basis.	Throughout the works	Weekly	The ET shall inform the ER and IEC of the non-compliance. The ER shall instruct the Contractor to remove waste accordingly.
Waste storage areas are properly cleaned and do not cause windblown litter and dust nuisance.	Throughout the works	Weekly	The ET shall inform the ER and IEC of the non-compliance. The ER shall instruct the Contractor to clean the storage area and/or cover the waste.
Different types of waste are segregated in different containers or skip to enhance recycling of material and proper disposal of waste.	Throughout the works	Weekly	The ET shall inform the ER and IEC of the non-compliance. The ER shall instruct the Contractor to provide separate skips/ containers. The Contractor shall ensure the workers place the waste in the appropriate containers.

Activities	Timing	Monitoring Frequency	If non-compliance, Action Required
Chemical wastes are stored, handled and disposed of in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, published by the EPD.	Throughout the works	Weekly	The ET shall inform the ER and IEC of the non-compliance. The ER shall instruct the Contractor to rectify the problems immediately. Warning shall be given to the Contractor if corrective actions are not taken within 24 hrs and the Waste Control Group of the EPD shall be identified.
Demolition material/waste in dump trucks are properly covered before leaving the site.	Throughout the works	Weekly	The ET shall inform the ER and IEC of the non-compliance. The ER shall instruct the Contractor to comply. The Contractor shall prevent trucks shall leaving the site until the waste are properly covered.
Wastes are disposal of at licensed sites.	Throughout the works	Weekly	The ET shall inform the ER and IEC of the non-compliance. The ER shall warn the Contractor and instruct the Contractor to ensure the wastes are disposed of at the licensed sites. Should it involve chemical waste, the Waste Control Group of EPD shall be notified.

Note: ET – Environmental Team, IEC – Independent Environmental Checker, ER – Engineer's Representative



## 9 WATER QUALITY

### 9.1 Introduction

- 9.1.1 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 9.1.2 Prior to the commencement of the construction work, a detailed site drainage management plan should be submitted to EPD. The plan should cover measures to minimize all potential water quality impact arising from the surface runoffs of all the related constructions.
- 9.1.3 The guidelines outlined in the Practice Note for Professional Persons (ProPECC), Construction Site Drainage (PN 1/94) should be adopted to control construction site runoff. Mitigation measures to minimise water quality impacts from construction site runoff and wastewater and sewage generated from construction activities are:
- Provision of site drainage systems over the entire construction site with sediment control facilities. Regular inspection and maintenance of the site drainage systems are required to ensure proper and efficient operation at all times.
  - Sedimentation tanks or package treatment systems are required to treat the large amount of sediment-laden wastewater generated from foundation construction work, wheel washing, site runoff. Any construction activities that generate wastewater with high concentrations of SS should also be collected to these facilities for proper treatment prior to disposal. Treated wastewater can be reused for vehicle washing, dust suppression and general cleaning. Bentonite slurry used in bore-pile construction should be reconditioned and reused to minimise the disposal volume of the used slurry.
  - The construction programme should be properly planned to avoid soil excavation in rainy seasons. Exposed stockpiles of excavated soils or construction materials should be covered with tarpaulin or impervious sheets to avoid release of pollutants into the drainage channels.
  - Sewage generated from site toilets and canteen should be collected using a temporary storage system. Chemical toilets should be provided at different locations for use by the workers on site. Licensed waste collectors should be employed for collection and disposal of the sewage. The drainage system for collection of wastewater generated from canteen, if any, should be equipped with grease trap capable of providing at least 20 minutes retention during peak flow.
  - Wheel washing facilities should be installed at all site entrances/exits.
  - An emergency plan should be developed by the contractors to deal with accidental spillage of chemicals.
- 9.1.4 Upon completion of the HKLR / HKBCF development, stormwater drainage systems would be completed to collect stormwater generated from the whole area including new roads. Sewage generated from the HKBCF development would be treated on site to fulfill effluent limit for discharge. Additional mitigation measures would not be required.
- 9.1.5 As identified in the EIA Reports and the applications for variations of the EPs, key water quality issues during construction phase will be filling works for the reclamation. Marine water quality monitoring shall be carried out during the construction phase to ensure that any unacceptable increase in suspended solids / turbidity and decrease in dissolved oxygen due to filling activities could be readily detected and timely action be taken to rectify the situation. The tentative construction works programme, details of works areas and construction works sequence and reclamation layout and plan of the Project is annexed in Appendix A.
- 9.1.6 Dissolved oxygen (DO), turbidity (NTU), suspended solids (SS) and other general in situ parameters shall be monitored at all designated marine water quality monitoring stations during the whole construction period. DO and turbidity should be measured in-situ whereas SS should be determined by an accredited laboratory.

- 9.1.7 Other relevant data shall also be recorded, including monitoring location / position, time, water depth, pH value, salinity, temperature, tidal stages, weather conditions and any special phenomena or work underway at the construction site. A sample data record sheet is shown in Appendix D for reference.
- 9.1.8 According to the EIA report, there is low concentration for PAH, PCB, TBT, and chlorinated pesticides. Monitoring of these chemicals would not be required during the construction stage.
- 9.1.9 The proposed water quality monitoring schedule shall be submitted to EPD at least 2 weeks before the first day of the monitoring month. EPD shall also be notified immediately for any changes in schedule by fax.

## 9.2 Monitoring Equipment

### ***Dissolved Oxygen and Temperature Measuring Equipment***

- 9.2.1 The instrument should be a portable and weatherproof dissolved oxygen (DO) measuring instrument complete with cable and sensor, and use a DC power source. The equipment should be capable of measuring:
- a DO level in the range of 0 - 20 mg/ L and 0 - 200% saturation; and
  - a temperature of 0 - 45 degree Celsius.
- 9.2.2 It should have a membrane electrode with automatic temperature compensation complete with a cable.
- 9.2.3 Should salinity compensation not be built-in to the DO equipment, in-situ salinity should be measured to calibrate the DO equipment prior to each DO measurement.

### ***Turbidity Measurement Instrument***

- 9.2.4 The instrument should be a portable and weatherproof turbidity measuring instrument using a DC power source. It should have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU (for example, Hach model 2100P or an approved similar instrument).

### ***Sampler***

- 9.2.5 A water sampler is required. It should comprise a transparent PVC cylinder, with a capacity of not less than 2 litres, which can be effectively sealed with latex cups at both ends. The sampler should have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth (for example, Kahlsico Water Sampler or an approved similar instrument).

### ***Water Depth Detector***

- 9.2.6 A portable, battery-operated echo sounder should be used for the determination of water depth at each designated monitoring station. This unit can either be hand held or affixed to the bottom of the work boat, if the same vessel is to be used throughout the monitoring programme.

### ***Salinity***

- 9.2.7 A portable salinometer capable of measuring salinity in the range of 0 - 40 parts per thousand (ppt) should be provided for measuring salinity of the water at each monitoring location.

### ***pH Measuring Equipment***

- 9.2.8 A portable pH meter capable of measuring a range between 0.0 and 14.0 shall be provided to measure pH under the specified conditions (e.g., Orion Model 250A or an approved similar instrument).

### ***Sample Containers and Storage***

- 9.2.9 Water samples for SS determinations should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory within 24 hours of collection and be analysed as soon as possible after collection.

**Monitoring Position Equipment**

- 9.2.10 A hand-held or boat-fixed type digital Differential Global Positioning System (DGPS) with way point bearing indication and Radio Technical Commission for maritime (RTCM) Type 16 error message ‘screen pop-up’ facilities (for real-time auto-display of error messages and DGPS corrections from the Hong Kong Hydrographic Office), or other equipment instrument of similar accuracy, should be provided and used during marine water monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

**Calibration of In-Situ Instruments**

- 9.2.11 The pH meter, DO meter and turbidimeter shall be checked and calibrated before use. DO meter and turbidimeter shall be certified by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes should be checked with certified standard solutions before each use. Wet bulb calibration for a DO meter shall be carried out before measurement at each monitoring location.

**Back-up Equipment and Vessels**

- 9.2.12 Sufficient stocks of spare parts shall be maintained for replacements when necessary. Backup monitoring equipment shall also be made available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, etc. For the on site calibration of field equipment, the BS127:1993, "Guide to Field and on-site test methods for the analysis of waters" shall be observed.
- 9.2.13 The Water Quality Monitoring will involve a large number of monitoring stations and measurements should be conducted within the prescribed tidal conditions (within ± 1.75 hour of the predicted mid-ebb or mid-flood tides) in order to ensure the measurement/samples are representative. A multi-probe monitoring equipment set integrated with water sampler(s) is highly recommended to improve the monitoring efficiency. It is, also, likely that more than one field survey vessels will be required simultaneously to ensure the monitoring are conducted within the acceptable monitoring windows. The ET shall also consider the use of unattended automatic sampling/monitoring devices at fixed stations where monitoring are required throughout the construction period. The use of such unattended automatic devices, however, shall be subject to the approval of the ER, IEC and EPD.

**9.3 Laboratory Measurement / Analysis**

- 9.3.1 Duplicate samples from each independent sampling event are required for SS measurement, which shall be carried in a HOKLAS or other international accredited laboratory. Sufficient water samples (of about 1L) shall be collected at the monitoring stations for carrying out the laboratory measurement and analysis. The laboratory determination work shall start within 24 hours after collection of the water samples. The analysis for SS is summarized in Table 9.1.
- 9.3.2 If a site laboratory is set up or a non-HOKLAS and non-international accredited laboratory is hired for carrying out the laboratory analysis, the laboratory equipment, analytical procedures, and quality control shall be approved by EPD. All the analysis shall be witnessed by the ER. The ET Leader shall provide the ER with one copy of the relevant chapters of the “APHA Standard Methods for the Examination of Water and Wastewater” 19th edition and any other relevant document for his reference.

**Table 9.1 Laboratory analysis for SS**

Parameters	Instrumentation	Analytical Method	Reporting Limit	Detection Limit
Suspended Solid (SS)	Weighting	APHA 2540-D	0.5mg/L	0.5mg/L

**9.4 Monitoring Locations**

- 9.4.1 The water quality monitoring stations, control stations and locations for during the construction and operation phase of HKBCF are shown in Figure 3. The demarcation of the monitoring stations for

different projects will be further determined by the ENPO before the commencement of the construction. The selections of these stations are based on the following criteria:

- i. Impact stations (IS) within 250m – 500m envelope of the construction works.
- ii. Sensitive receiver stations (SR) near to key sensitive receivers.
- iii. Control / far field stations (CS) at representative locations with less influence by the projects. Control stations should be located, as far as practicable, both upstream and downstream of the works area.
- iv. Stations for sensitivity test result (ST), which are located close to the HKSAR boundary (i.e 3 sensitivity test stations).
- v. Impact stations (IS(Mf)) around the on-site Mf deposition sites during the on-site disposal of Mf material.

9.4.2 The co-ordinates of the proposed monitoring stations during the construction phase are listed in Table 8.2. As shown in Figure 3, the proposed locations for the sensitive receiver monitoring stations represent the typical sensitive receivers around the project works.

**Table 9.2 Water Quality Monitoring Stations (construction phases)**

Station	Description	East	North
IS5	Impact Station (Close to HKBCF construction site)	811579	817106
IS(Mf)6	Impact Station (Close to HKBCF construction site)	812101	817873
IS7	Impact Station (Close to HKBCF construction site)	812244	818777
IS8	Impact Station (Close to HKBCF construction site)	814251	818412
IS(Mf)9	Impact Station (Close to HKBCF construction site)	813273	818850
IS10	Impact Station (Close to HKBCF construction site)	812577	820670
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497
IS17	Impact Station (Close to HKBCF construction site)	814539	820391
SR3	Sensitive receivers (San Tau SSSI)	810525	816456
SR4(N)	Sensitive receivers (Tai Ho)	814705	817859
SR5	Sensitive receivers (Artificial Reef in NE Airport)	811489	820455
SR6	Sensitive receivers (Sha Chau and Lung Kwu Chau Marine Park)	805837	821818
SR7	Sensitive receivers (Tai Mo Do)	814293	821431
SR10A <sup>[1]</sup>	Sensitive receivers (Ma Wan FCZ) 1	823741	823495
SR10B(N) <sup>[1]</sup>	Sensitive receivers (Ma Wan FCZ)2	823683	823187
CS(Mf)3	Control Station	809989	821117
CS(Mf)5	Control Station	817990	821129
CS4	Control Station	810025	824004
CS6	Control Station	817028	823992
CSA <sup>[2]</sup>	Control Station	818103	823064

Note [1]: Additional monitoring station for Ma Wan FCZ.

[2]: Additional control monitoring station for Ma Wan FCZ.

9.4.3 Control stations are necessary to compare the water quality from potentially impacted sites with the ambient water quality. Control stations shall be located within the same body of water as the impact monitoring stations but should be outside the area of influence of the works and, as far as practicable, not affected by any other works. If there are any changes on the monitoring location, that shall be submitted 4 weeks before commencement of baseline monitoring for EPD approval.

9.4.4 In-situ monitoring (DO, temperature, turbidity, pH, salinity) and water sample for SS shall be taken at 3 water depths, namely, 1 m below water surface, mid-depth and 1 m above sea bed, except where the water depth is less than 6 m, in which case the mid-depth station may be omitted. Should the

water depth be less than 3 m, only the mid-depth station will be monitored. The status and locations of water sensitive receivers and the marine activities may change after issuing this Manual. If such cases exist, the ET Leader shall propose with justification for changes to monitoring locations or other requirements of the EM&A programme, and seek approval from the IEC and EPD.

- 9.4.5 The ENPO may, depending on site conditions and monitoring results, decides whether additional monitoring locations shall be included or any monitoring locations could be removed / relocated during any stage of the construction phase after getting approval from EPD.

## 9.5 Baseline Monitoring for Water Quality

- 9.5.1 Baseline conditions for marine water quality shall be established and agreed with EPD prior to the commencement of works. The purpose of the baseline monitoring is to establish ambient conditions prior to the commencement of the works and to demonstrate the suitability of the proposed impact and control monitoring stations. The baseline conditions shall normally be established by measuring the DO, temperature, turbidity, pH, salinity and SS at all designated locations. The measurements shall be taken at all designated monitoring stations including control stations, 3 days per week, at mid-flood (within  $\pm 1.75$  hour of the predicted time) and mid-ebb (within  $\pm 1.75$  hour of the predicted time) tides, for at least 4 weeks prior to the commencement of marine works.

- 9.5.2 Baseline monitoring programme may overlap with other reclamation activities. The monitoring exercise should be scheduled as far as possible to avoid concurrent dredging / backfilling activities around the monitoring stations such that representative ambient data could be sampled.

- 9.5.3 Other relevant data shall also be recorded, such as monitoring location / position, time, water depth, tidal stages, weather conditions and any special phenomena underway near the monitoring station. There shall not be any marine construction activities in the vicinity of the stations during the baseline monitoring.

- 9.5.4 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

- 9.5.5 Baseline monitoring schedule shall be faxed to EPD 2 weeks prior to the commencement of baseline monitoring. The interval between two sets of monitoring shall not be less than 36 hours.

## 9.6 Efficiency of Silt Curtain and Cage Curtain

- 9.6.1 The ET shall be responsible for conducting pilot test to confirm that their silt curtain systems to be adopted would satisfy the requirements in the EIA Report. The details for the pilot test shall be determined by the ENPO and agreed by EPD before the commencement of the monitoring, taking account of the Contractor's proposed actual locations of his initial period of filling works.

- 9.6.2 ET Leader shall submit the pilot test proposal detailing the layout of silt curtains, monitoring location and testing arrangement for IEC and EPD's agreement before conducting the pilot tests.

- 9.6.3 During the initial period of filling works for HKBCF and southern landfall of TMCLKL, the silt-removal efficiency of the silt-curtains shall be verified by examining the results of water quality monitoring points. The water quality monitoring points to be selected for the above shall be those close to the locations of the initial period of filling work.

- 9.6.4 Pilot test should be carried out during the early stage of construction to confirm whether the silt removal efficiency of the cage type silt curtain and the floating type silt curtains can achieve 80% and 45% silt removal efficiency for filling activities respectively when deployed separately, and a combined reduction of 95% and 61% when the two type of silt curtains are used jointly. Pilot test for cage type silt curtain (with steel enclosure) should be carried out to see if the cage type silt curtain (with steel enclosure) can achieve 80% reduction when applied singly under current above 0.5 m/s.

- 9.6.5 The pilot test shall include basic measurements such as turbidity and suspended solids as well as current speed and direction. Where testing of cage type silt curtain (with steel enclosure) to is to be conducted at relatively fast current, supplementary Acoustic Doppler Current Profiler (ADCP) measurement of the plumes shall be considered to provide a better characterization of instant suspended solids plumes.

- 9.6.6 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

- 9.6.7 Regardless of the measured efficiency of the silt curtain system, the event and action plan shall only be based on the monitoring results at the designed monitoring stations.

## 9.7 Impact Monitoring for Water Quality

### *Reclamation*

- 9.7.1 Reclamation would require dredging and filling activities during the construction. During this period, silt curtains would be installed enclosing the whole project site to control sediment loss. During the construction period, monitoring shall be undertaken 3 days per week, at mid-flood (within  $\pm 1.75$  hour of the predicted time) and mid-ebb (within  $\pm 1.75$  hour of the predicted time) tides, with sampling / measurement at the designated monitoring stations. Replicate in-situ measurements and samples collected from each independent sampling event shall be collected to ensure a robust statistically interpretable database. The interval between two sets of monitoring shall not be less than 36 hours except where there are exceedances of Action and / or Limit levels, in which case the monitoring frequency will be increased. Two consecutive measures of DO concentration, DO saturation, pH, salinity, temperature, turbidity and water samples for SS will be taken in situ at 1 m below the surface, mid-depth and 1 m above the seabed at each location. If the water depth is less than 6 m, the mid-depth measurement may be omitted subject to the approval of the ER. If the depth is less than 3 m, only the mid-depth measurements need to be taken subject to the approval of the ER. The monitoring probes shall be retrieved out of water after the first measurement and then redeployed for the second measurement. Where the difference in value between the first and second readings of DO or turbidity parameters is more than 25% of the value of the first reading, the reading shall be discarded and further readings shall be taken. For the construction phase, the nutrients and metal parameters only have to be measured at the locations with "Mf" during period of Mf sediment backfilling. After the pit for Mf sediment is backfilled and capped for one month, monitoring at IS(Mf)18, IS9(Mf)19 and IS(Mf)20 locations can be stopped.
- 9.7.2 If the impact monitoring results indicate that filling works have caused adverse impacts on water quality at the monitoring stations, appropriate actions (including the lowering of production rates for filling) should be taken and additional mitigation measures should be implemented as necessary. Water quality monitoring frequency has to be increased to once per day when filling is undertaken. 24-hour monitoring of turbidity should be implemented as and when necessary. The monitoring results should be made available to the EPD, ER and IEC within eight working days.

### *Relocation of Mf Sediment with Reclamation Area*

- 9.7.3 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 9.7.4 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

### *Water Quality Monitoring along the Water Boundary of Hong Kong and Mainland*

- 9.7.5 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

## 9.8 Post-construction Monitoring

- 9.8.1 Upon completion of all marine-based construction activities, a post-project monitoring exercise on water quality shall be carried out for 4 weeks in the same manner as the Baseline monitoring. Replicate in-situ measurements and samples collected from each independent sampling event shall be collected to ensure a robust statistically interpretable database. The measurement parameters for Post-construction monitoring shall include DO concentration and saturation, temperature, turbidity, pH, salinity and SS. The measurement shall be taken at all designated monitoring stations including control stations, 3 days per week, at mid-flood (within  $\pm 1.75$  hour of the predicted time) and mid-ebb (within  $\pm 1.75$  hour of the predicted time) tides, for at least 4 weeks. Since the southern and northern landfalls of TM-CLKL are distant from each other and based on the tentative programme available during the EIA stage the two landfall has different construction time frame, the Post-construction monitoring for each landfalls may conducted separately. The ET should review the actual implantation programme and recommend if a separate post-construction monitoring for each landfall is required.

**9.9 Impact Operation Phase Monitoring**

9.9.1 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

9.9.2 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)



## 9.10 Event and Action Plan

9.10.1 The Action and Limit levels for water quality are defined in Table 9.3. Should non-compliance of the criteria occur, action in accordance with the Action Plan in Table 9.4 shall be carried out.

9.10.2 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

**Table 9.3 Action and Limit Levels for Water Quality**

Parameters	Action	Limit
DO in mg L <sup>-1</sup> (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6
SS in mg L <sup>-1</sup> (depth-averaged) at all monitoring stations and control stations	23.5 and 120% of upstream control station's SS at the same tide of the same day*	34.4 and 130% of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes*
Turbidity in NTU (depth-averaged)	27.5 and 120% of upstream control station's turbidity at the same tide of the same day*	47.0 and 130% of upstream control station's turbidity at the same tide of the same day*

\* Remarks: Reference is made to EPD approval of adjustment of water quality assessment criteria issued and became effective on 18 February 2013.

Notes: 1. "depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.

2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
3. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
4. All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.
5. The 1%-ile of baseline data for dissolved oxygen (surface and middle) and dissolved oxygen (bottom) are 4.2mg/L and 3.6mg/L respectively.

Table 9.4 Event and Action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> <li>1. Repeat <i>in situ</i> measurement to confirm findings;</li> <li>2. Identify source(s) of impact;</li> <li>3. Inform IEC, contractor and ER;</li> <li>4. Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>5. Discuss mitigation measures with IEC, ER and Contractor;</li> <li>6. Ensure mitigation measures are implemented;</li> <li>7. Repeat measurement on next day of exceedance to confirm findings.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor's working methods;</li> <li>2. Discuss with ET and Contractor on possible remedial actions;</li> <li>3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>4. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of non-compliance in writing;</li> <li>2. Discuss with IEC on the proposed mitigation measures;</li> <li>3. Make agreement on mitigation measures to be implemented;</li> <li>4. Ensure mitigation measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and confirm notification of the non-compliance in writing;</li> <li>2. Rectify unacceptable practice;</li> <li>3. Check all plant and equipment and consider changes of working methods;</li> <li>4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER;</li> <li>5. Implement the agreed mitigation measures.</li> <li>6. Amend working methods if appropriate.</li> </ol>
Action level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> <li>1. Repeat <i>in situ</i> measurement to confirm findings;</li> <li>2. Identify source(s) of impact;</li> <li>3. Inform IEC, Contractor and ER;</li> <li>4. Check monitoring data, all plant,</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor's working method;</li> <li>2. Discuss with ET and Contractor on possible remedial actions;</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of non-compliance in writing;</li> <li>2. Discuss with IEC on the proposed mitigation measures;</li> <li>3. Make agreement on mitigation</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the Engineer and confirm notification of the non-compliance in writing;</li> <li>2. Rectify unacceptable practice;</li> <li>3. Check all plant and equipment and consider changes of</li> </ol>

	<p>equipment and Contractor's working methods;</p> <p>5. Discuss mitigation measures with IEC, ER and Contractor;</p> <p>6. Ensure mitigation measures are implemented;</p> <p>7. Increase the monitoring frequency to daily until no exceedance of Action level;</p> <p>8. Repeat measurement on next day of exceedance to confirm findings.</p>	<p>3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly;</p> <p>4. Assess the effectiveness of the implemented mitigation measures.</p>	<p>measures to be implemented;</p> <p>4. Ensure mitigation measures are properly implemented;</p> <p>5. Assess the effectiveness of the implemented mitigation measures.</p>	<p>working methods;</p> <p>4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER within 3 working days of notification;</p> <p>5. Implement the agreed mitigation measures;</p> <p>6. Amend working methods if appropriate.</p>
<p>Limit level being exceeded by one sampling day</p>	<p>1. Repeat <i>in-situ</i> measurement to confirm findings;</p> <p>2. Identify source(s) of impact;</p> <p>3. Inform IEC, Contractor, ER and EPD;</p> <p>4. Check monitoring data, all plant, equipment and Contractor's working methods;</p> <p>5. Discuss mitigation measures with IEC, ER and Contractor;</p> <p>6. Ensure mitigation measures are</p>	<p>1. Check monitoring data submitted by ET and Contractor's working method;</p> <p>2. Discuss with ET and Contractor on possible remedial actions;</p> <p>3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly;</p> <p>4. Assess the effectiveness of the implemented mitigation</p>	<p>1. Confirm receipt of notification of failure in writing;</p> <p>2. Discuss with IEC, ET and Contractor on the proposed mitigation measures;</p> <p>3. Request Contractor to critically review the working methods;</p> <p>4. Ensure mitigation measures are properly implemented;</p> <p>5. Assess the effectiveness of the implemented mitigation</p>	<p>1. Inform the ER and confirm notification of the non-compliance in writing;</p> <p>2. Rectify unacceptable practice;</p> <p>3. Check all plant and equipment and consider changes of working methods;</p> <p>4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER;</p> <p>5. Implement the agreed mitigation measures;</p>

	implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level.	measures.	measures.	6. Amend working methods if appropriate.
Limit level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> <li>1. Repeat <i>in-situ</i> measurement to confirm findings;</li> <li>2. Identify source(s) of impact;</li> <li>3. Inform IEC, contractor, ER and EPD;</li> <li>4. Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>5. Discuss mitigation measures with IEC, ER and Contractor;</li> <li>6. Ensure mitigation measures are implemented;</li> <li>7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor's working method;</li> <li>2. Discuss with ET and Contractor on possible remedial actions;</li> <li>3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Discuss with IEC, ET and Contractor on the proposed mitigation measures;</li> <li>3. Request Contractor to critically review the working methods;</li> <li>4. Make agreement on the mitigation measures to be implemented;</li> <li>5. Ensure mitigation measures are properly implemented;</li> <li>6. Assess the effectiveness of the implemented mitigation measures;</li> <li>7. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and confirm notification of the non-compliance in writing;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Rectify unacceptable practice;</li> <li>4. Check all plant and equipment and consider changes of working methods;</li> <li>5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER;</li> <li>6. Implement the agreed mitigation measures;</li> <li>7. Resubmit proposals of mitigation measures if problem still not under control;</li> <li>8. As directed by the Engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.</li> </ol>

**9.11 Mitigation Measures**

9.11.1 The EIA Report has assessed the water quality impacts caused by the construction stages and recommended mitigation measures to ensure compliance with the relevant legislative requirements. In addition, the EP also recommended several mitigation measures on reclamation works of the Project.

### **Reclamation**

9.11.2 The mitigation measures on reclamation works are summarised below:

- Floating type perimeter silt curtains shall be installed around the HKBCF site before the commencement of marine works. Staggered layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be at least 200m. Appendix A shows the layout plan of perimeter silt curtains during construction works;
- Single layer silt curtain to be applied around the North-east airport water intake;
- The silt-curtains should be maintained in good condition to ensure the sediment plume generated from filling be confined effectively within the site boundary;
- The filling works shall be scheduled to spread the works evenly over a working day;
- Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, except for the sand blanket filling, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. The maximum daily filling rate of sand blanket shall be 24,000 m<sup>3</sup>. During the sand blanket placement, cage type double layer silt curtain shall be deployed around the filling points. All underwater filling works shall be carried out behind seawalls to avoid dispersion of suspended solids outside the Project limit;
- Cellular structure shall be used for seawall construction;
- A layer of geotextile shall be placed on top of the seabed before any filling activities take place inside the cellular structures to form the seawall;
- The conveyor belts shall be fitted with windboards and conveyor release points shall be covered with curtain to prevent any spillage of filling materials onto the surrounding waters;
- Except for the filling of the cellular structures, not more than 15% public fill shall be used for reclamation filling below +2.5mPD during construction of the seawall;
- After the seawall is completed except for the 300m marine access as indicated in Appendix A, not more than 30% public fill shall be used for reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained;
- Upon completion of 200m leading seawall, no more than a total of 60 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 60,000 m<sup>3</sup> for HKBCF and TMCLKL southern landfall reclamation during the filling operation; and
- Upon completion of the whole section of seawall except for the 300m marine access as indicated in Appendix A, no more than a total of 190 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 190,000 m<sup>3</sup> for the remaining filling operations for HKBCF and TMCLKL southern landfall reclamation.

9.11.3 Any proposed changes in the construction sequences and/or arrangements shall be proposed before implementation of such changes. The proposed changes shall be certified by the ETL and verified by the IEC as conforming to the information and requirements contained in the EIA Report.

9.11.4 To ensure that the cumulative maximum filling rate assumed in the EIA report shall not be exceeded, at least one week prior to the end of each calendar month, the Permit Holder shall submit the anticipated daily filling rate for the coming month to the ENPO for approval. The actual maximum daily filling rate shall not exceed the approved filling rate by ENPO. The actual maximum daily filling rate shall not exceed the approved filling rate by ENPO.

### **Stone Column Installation**

- 9.11.5 An additional layer of silt curtain, as shown in Appendix E, shall be installed near the active stone column installation points. A layer of geotextile with stone blanket on top shall be placed on the seabed prior to stone column installation works.

#### ***Construction Site Run-off and Wastewater and Sewage Generated from Construction Activities***

- 9.11.6 The guidelines outlined in the Practice Note for Professional Persons (ProPECC), Construction Site Drainage (PN 1/94) should be adopted to control construction site runoff. Mitigation measures to minimise water quality impacts from construction site runoff and wastewater and sewage generated from construction activities are:

- Sedimentation tanks or package treatment systems are required to treat the large amount of sediment-laden wastewater generated from foundation construction work, wheel washing, site runoff. Any construction activities that generate wastewater with high concentrations of SS should also be collected to these facilities for proper treatment prior to disposal. Treated wastewater can be reused for vehicle washing, dust suppression and general cleaning.
- The construction programme should be properly planned to avoid soil excavation in rainy seasons. Exposed stockpiles of excavated soils or construction materials should be covered with tarpaulin or impervious sheets to avoid release of pollutants into the drainage channels.
- Sewage generated from site toilets and canteen should be collected using a temporary storage system. Chemical toilets should be provided at different locations for use by the workers on site. Licensed waste collectors should be employed for collection and disposal of the sewage. The drainage system for collection of wastewater generated from canteen, if any, should be equipped with grease trap capable of providing at least 20 minutes retention during peak flow.
- Wheel washing facilities should be installed at all site entrances/exits.
- An emergency plan should be developed by the contractors to deal with accidental spillage of chemicals.

- 9.11.7 Prior to the commencement of the construction work, a detailed site drainage management plan should be submitted to EPD. The plan should cover measures to minimize all potential water quality impact arising from the surface runoffs of all the related constructions.

- 9.11.8 The EIA Report has also recommended construction mitigation measures. All the prepared mitigation measures are summarised in the EMIS in Appendix B.

#### **9.12 Performance Review for Stone Column Installation**

- 9.12.1 The Contractor shall be responsible for conducting performance review to confirm that the stone column installation method to be adopted would be satisfactory. The details for the pilot test shall be agreed by the ENPO before the commencement of the monitoring, taking account of the Contractor's proposed actual locations of his initial period of stone column installation works.

- 9.12.2 During the initial period of stone column installation works for HKBCF and southern landfall of TMCLKL, the environmental performance of the installation method shall be verified by examining the results of water quality monitoring points. The water quality monitoring points to be selected for the above shall be those close to the locations of the initial period of stone column installation work.

- 9.12.3 The pilot test shall include basic measurements such as turbidity and suspended solids as well as current speed and direction.

- 9.12.4 Regardless of the results of performance verification, the event and action plan shall only be based on the monitoring results at the designed monitoring stations.

## 10 ECOLOGY

### 10.1 Introduction

10.1.1 The EIA Report has assessed the ecological impacts caused by the construction phase. Mitigation measures have been recommended in the EIA to ensure compliance with the relevant legislative requirements. The mitigation measures and ecological monitoring surveys are stated in this manual in the sections below. A detailed ecological monitoring plan with specification and detailed methodology will be prepared prior to the baseline monitoring, and submitted to AFCD and EPD for approval.

### 10.2 Ecological Mitigation Measures and Implementations\*

\*Remarks - Regular environmental briefing/training sessions should be provided to site staffs to ensure proper implementation of relevant mitigation measures.

#### ***Marine Water Quality***

10.2.1 Low disturbance construction method: Any significant changes in water quality or turbidity should be avoided. This could be mitigated through construction methods.

10.2.2 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

10.2.3 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

10.2.4 Good Site Practices: – The integrity and effectiveness of all silt curtains should be regularly inspected. Effluent monitoring should be incorporated to make sure that the discharged effluent from construction sites meets the relevant effluent discharge guidelines. Regularly check the work site boundaries to ensure that they are not breached and that damage does not occur to surrounding areas.

10.2.5 Strict enforcement on No-dumping – To avoid degrading the Chinese White Dolphin habitat, restrictions prohibiting dumping of rubbish, food, oil, or chemicals will be strictly enforced.

10.2.6 Site runoff control - For works on land, standard site runoff control measures will be established and strictly enforced to ensure that discharge of contaminated or silt-laden runoff into North Lantau waters is minimised.

10.2.7 Spill response plan – In the event of vessels operating in the works areas transporting oil or other hazardous chemicals, an oil-spill response plan, with specific provisions for protecting marine ecology and dolphins, will be formulated.

10.2.8 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

#### ***Terrestrial Disturbance***

10.2.9 The impact from this minor and short-term source can be reduced by good site practice, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time. Regularly checking on the work site boundaries to ensure that they are not breached and that damage does not occur to surrounding areas.

#### ***Sedimentation from Land-based works areas***

10.2.10 Good site practices (e.g., watering to reduce dust generation, prevention of siltation of freshwater habitats) are recommended to be implemented. Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter existing streams and standing freshwater.

#### ***Marine Noise and Disturbance***

##### **1) Bored piling**

10.2.11 Avoidance of percussive piling – In view of its strong potential to cause serious noise impact upon the dolphins and porpoises, underwater percussive piling will not be adopted. Steel cells were installed using vibratory methods.

10.2.12 N.A.

10.2.13 N.A.

### **2) Sheet piling**

10.2.14 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

10.2.15 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

### **3) Reclamation and Works Vessels**

10.2.16 Dolphin Exclusion Zone – dolphin exclusion zone of 250m radius should be implemented in the reclamation sites during the installation of the perimeter silt curtains and any re-deployment of the perimeter silt curtains. Prior to the start of the works, dolphin observers shall scan the exclusion zone for at least 30 minutes at location with unobstructed, elevated view of the area to certify the dolphin exclusion zone is continuously clear of dolphins for a period of 30 minutes. Works will be suspended when any Chinese White Dolphin (CWD) is found within the exclusion zone. The dolphin observers shall have relevant training on dolphin monitoring and should be independent of the construction contractor and form part of the Environmental Team. Passive Acoustic Monitoring, using hydrophones or cetacean detectors, shall be used for the detection of dolphin outside the daylight hours.

10.2.17 Dolphin Watching Plan - A dolphin watching plan for works areas will also be included in the EM&A programme. For reclamation sites, once the perimeter silt curtains are installed or re-deployed, the filling works would be conducted inside the silt curtains and a dolphin exclusion zone is not needed. Instead a dolphin watching plan will be performed. The plan would include regular inspection of the silt curtains, visual inspection of the waters surrounded by the curtains, and an action plan should be devised to cope with any unpredicted incidents such as in case dolphins are found within the waters surrounded by the silt curtains.

10.2.18 Acoustic decoupling of compressors and other equipment – Air compressors and other noisy equipment that must be mounted on construction vessels will be acoustically-decoupled to the greatest extent feasible, for instance by using rubber air-filled tires. A proposal on design and implementation of acoustic decoupling measures applied during reclamation works should be deposited with the EPD before the commencement of the construction of the Project.

### **Marine Traffic**

10.2.19 Vessel speed limit control – It is known that fast-moving vessels are a threat to dolphins and porpoises, a speed limit of 10 knots will be strictly enforced within the work areas. This speed limit for vessels within the boundaries of the Sha Chau/Lung Kwu Chau Marine Park appears to be effective in protecting the dolphins from vessel collisions.

10.2.20 Skipper training – Captains of construction vessels working in the West Lantau waters and near the Brothers Islands should undergo training to learn about local dolphins and porpoises. They should be trained to be aware of the protocol for “dolphin friendly” vessel operation (reference made to Code of Conduct for Dolphin Watching Activities available from AFCD).

10.2.21 Predefined and regular routes for working vessels – Captains of all working vessels should be required to use regular travel routes, in order to minimize the chance of vessel collision. And the routes would not go through the dolphin hotspot in Brothers Islands. A plan showing the regular marine travel routes of vessels moving to and from the Project work sites should be deposited to EPD at least 2 weeks before the commencement of the construction of the Project. Any subsequent changes to the regular routes shall be verified by the IEC as conforming to the requirements in the EIA Report and deposited to EPD.

### **Road Surface Runoff**

10.2.22 Silt-grease traps should be deployed to prevent a direct input of road surface runoff to the marine waters.

### **Chemical spillage**



- 10.2.23 A Maritime Oil Spill Response Plan (MOSRP) has been developed by Marine Department to deal with oil spill and their potential hazard to the Hong Kong waters. The main objective of the MOSRP is to ensure a timely and effective response to oil spillages and/or their potential treats in the Hong Kong waters.
- 10.2.24 Similar to the Shenzhen Western Corridor project, a Spill Response Plan will be formulated to deal with the accidental event of the serious spillage of oil or other hazardous chemicals and it should be at least 1 month before the commencement of the construction of the Project. A Spill Response Plan in this regard will be primarily for safety issues and water quality, but could also help to safeguard the dolphin population. It will detail the actions to be taken in the event of accidental spillage of oil or other hazardous chemicals from construction activities including vessels operating of for the Project, with specific provisions for protecting marine ecology and the Chinese White Dolphins. Following the example of Shenzhen Western Corridor, it will be specified in the contingency plan that AFCD must be alerted by the Hong Kong Police Force or Fire Service Department in case an accident of spillage of chemical or oil is reported.

#### ***Precautionary/Enhancement Measures***

- 10.2.25 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.2.26 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.2.27 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

### **10.3 Monitoring and Audit for Ecology**

- 10.3.1 An ecological monitoring and audit programme would be needed for the Project. The monitoring programme will include monitoring of physical parameters such as air, noise and water quality, and ecological aspects such as CWD. The ecological monitoring and audit programme will monitor potential impacts through construction activities, and will verify the assessments which were made in the EIA report. The monitoring includes the following tasks:
- 10.3.2 Vessel-based dolphin monitoring – A dolphin monitoring programme at Northeast and Northwest Lantau, in particular the dolphin sighting hotspots (e.g. Brothers Islands) and areas where juveniles have been sighted, should be set up to verify the predictions of impacts and to ensure that there are no unforeseen impacts on the dolphin population during construction phase. The monitoring period should cover the pre-construction phase (baseline conditions), the entire period of construction phase (tentatively 2012 – 2016), and at least two years after the completion of construction works<sup>1</sup>.
- 10.3.2.1 The dolphin monitoring should adopt line-transect vessel survey method, and cover the following line-transect survey areas as in AFCD annual marine mammal monitoring programme:
- Northeast Lantau survey area; and
  - Northwest Lantau survey area.
- 10.3.2.2 On each survey day, the survey vessel will depart from Tung Chung Development Pier or nearest convenient and safe location. Observation for incidental sighting will begin immediately at the beginning of the transect lines as defined by AFCD monitoring programme. The survey vessel shall have an open upper deck, allowing for observer eye heights of 4 to 5m above water level and relatively unobstructed forward visibility between 270° and 90°. When on-effort, the vessel shall travel along the survey lines at a speed of approximately 7 to 8 knots (13 to 15 km/hr). The direction of the survey shall be alternated on different days to avoid possible biases related to the timing of the survey coverage.
- 10.3.2.3 Vessel-based transect observations by a three-person team shall be conducted by searching the 180° swath in front of the survey vessel (270° to 90°). The area behind the vessel need not be searched, although dolphins observed in this area should be recorded as off-effort sightings. The primary observer will scan the entire search path (270° to 90°) continuously with Fujinon 7x50 marine binoculars or equivalent as the second member of the team, designated the data “recorder”,

<sup>1</sup> This Contract involves impact monitoring of dolphins during construction phase only. The responsibility of post construction vessel-based dolphin monitoring (at least two years after the completion of construction works) will be assigned to relevant contract by the Authority in the later stage of the Hong Kong-Zhuhai-

scans the same area with the naked eye and occasional binocular check. The third observer on the boat is required to rotate into the observation team after half an hour, thus relieving one of the initial team. Observers should rotate every half an hour. While on-effort, observers shall ignore potential sighting cues that could bias the sighting distance calibration (e.g. pair-trawl fishing vessels).

- 10.3.2.4 A critical consideration in the survey will be to ensure a strict timed quantification of “sighting effort” in order to maximise the comparative value of the field survey results. The time and position for the start and end of a period of intensive, uninterrupted effort, and the sighting conditions such as visibility range and Beaufort scale associated with it shall be recorded. The collection of effort data allows comparisons within a single study as well as between studies. Strict recording of time and speed travelling along the assigned transect (“on-effort”) shall, therefore, be recorded. Time spent during any deviation from the transect will be recorded as “off-effort”.
- 10.3.2.5 During periods of poor weather, when visibility is hindered (e.g., below 1km) or when a Beaufort force 5 is reached, the survey should normally be postponed.
- 10.3.2.6 Sightings distant to 500m perpendicular distance and sightings of single dolphins that were hard to track should not be pursued (although those distant to 500m ahead of the vessel should be pursued). The initial sighting distance between the dolphin and the survey vessel and sighting angle shall be recorded in order to estimate the positions of the dolphins. These and other details of the sighting, including the exact location of the sighting and number of individuals should be agreed among the observation team and recorded immediately. Distances and angles shall be as accurate as possible.
- 10.3.2.7 A global positioning system shall be used during the surveys. A sighting record shall be filled out at the initial sighting with time, position, distance and angle data filled in immediately and verified between primary observer and recorder. All other information on sea state, weather conditions (Beaufort Scale), as well as notes on dolphin appearance, behaviour, and any other information shall also be completed.
- 10.3.2.8 A summary of equipment requirement is summarized in Table 6.5 below.

**Table 10.1 Summary of Dolphin Monitoring Equipment Requirements**

Equipment	Type
Vessel for Monitoring	A monitoring boat which should have a flying bridge or upper deck with a relatively unobstructed forward visibility (270° – 90°) allowing for observer eye height of 4-5m above water
Observation	Fujinon 7x50 marine binoculars (or similar) with compass/reticule
Calibration	Leica Geovid laser range finder binnacles or equivalent
Navigation and Positioning	Global Positioning System Device (Magellen NAV 5000D or similar approved) (+ spare batteries)

- 10.3.2.9 As the project will last for a few years, the ET Leader should seek approval from the IEC, AFCD and EPD on an appropriate methodology and parameters to be recorded. A detailed ecological monitoring plan with specification and detailed methodology for baseline monitoring will be prepared prior to the baseline monitoring, and submitted to AFCD and EPD for approval.
- 10.3.2.10 In order to provide a suitable long-term dataset for comparison, baseline, impact and post-construction phase dolphin monitoring will employ an identical methodology and follow the same line transects.
- 10.3.3 N.A (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

- 10.3.4 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.3.5 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.3.6 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.3.7 The ecological monitoring surveys shall be undertaken by suitably qualified specialist(s), (i.e. dolphin specialist), who shall have sufficient (at least 5-10 years) relevant post-graduate experience and publication in the respective aspects and should be independent of the construction contractor and should form part of the independent ET. Approval on the specialist(s) responsible for ecological monitoring survey shall be sought from AFCD and EPD. The IEC may audit the work of the ET if deemed necessary.

#### **10.4 Monitoring Locations**

- 10.4.1 The dolphin monitoring should adopt line-transect vessel survey method, and cover the following line-transect survey areas as in AFCD annual marine mammal monitoring programme:
- Northeast Lantau survey area; and
  - Northwest Lantau survey area.
- 10.4.2 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.4.3 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.4.4 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.4.5 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

#### **10.5 Baseline Monitoring for Ecology**

- 10.5.1 Baseline for dolphin monitoring shall be established by two surveys per month in each survey area stated in Section 9.3.3 for a period of three months prior to the commencement of works and agreed with AFCD. The purpose of the baseline monitoring is to establish pre-construction conditions prior to the commencement of the works and to demonstrate the suitability of the proposed monitoring method.
- 10.5.2 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.5.3 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.5.4 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.5.5 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

#### **10.6 Impact Monitoring for Ecology**

- 10.6.1 Dolphin monitoring will be conducted twice a month in each survey area stated in Section 10.4.1 throughout the entire construction period.
- 10.6.2 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.6.3 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

- 10.6.4 Should dolphin sighting numbers, density or the distribution pattern in the construction or post construction<sup>2</sup> be significantly different (taking into account naturally occurring alterations to distribution patterns such as due to seasonal change) to the pre-construction baseline activity, the ET should inform AFCD and investigate the possible causes of the change. Appropriate actions and a further monitoring should be recommended and additional mitigation measures should be implemented as necessary. Data should then be re-assessed and the need for any further monitoring established. The monitoring results should be made available to EPD, AFCD, ER and IEC within 2 weeks after the last survey day of the monitoring month.
- 10.6.5 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)
- 10.6.6 The data from impact monitoring should be compared with the pre-construction baseline findings. Any apparent differences in density among survey phases should be analysed for trends and the statistical power of the analysis to detect effects of the desired size should be tested. Statistical procedures shall be used for data comparison. A range of applicable statistical procedures exist (e.g., t-test, ANOVA and ANCOVA, etc.) and the ET shall propose the procedure to be applied as part of the impact and post-construction<sup>2</sup> dolphin monitoring programme design to be agreed with AFCD prior to the monitoring being undertaken.
- 10.6.7 Should dolphin sighting numbers, density or the distribution pattern in the construction or post construction phases<sup>2</sup> be significantly different (taking into account naturally occurring alterations to distribution patterns such as due to seasonal change) to the pre-construction baseline activity, the ET should inform AFCD and investigate the possible causes of the change. Appropriate actions and a further monitoring should be recommended and additional mitigation measures should be implemented as necessary. Data should then be re-assessed and the need for any further monitoring established. The monitoring results should be made available to EPD, AFCD, ER and IEC within 2 weeks after the last survey day of the monitoring month.
- 10.6.8 Comparison of the impact and post-construction<sup>2</sup> dolphin monitoring with that of over the pre-construction baseline dolphin monitoring will allow the assessment of the overall efficacy of the project-specific mitigation measures through the implementation of an Event and Action Plan detailed in the Table 10.2.

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<sup>2</sup> This Contract involves impact monitoring of dolphin during construction phase only. The responsibility of post construction dolphin monitoring will be assigned to relevant contract by the Authority in the later stage of the Hong Kong-Zhuhai-Macao Bridge project.

**Table 10.2 EVENT AND ACTION PLAN**

Event	ET Leader	IEC	ER / SOR	Contractor
Action Level	<ol style="list-style-type: none"> <li>1. Repeat statistical data analysis to confirm findings;</li> <li>2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&amp;A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences;</li> <li>3. Identify source(s) of impact;</li> <li>4. Inform the IEC, ER/SOR and Contractor;</li> <li>5. Check monitoring data.</li> <li>6. Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor;</li> <li>2. Discuss monitoring results and finding with the ET and the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss monitoring with the IEC and any other measures proposed by the ET;</li> <li>2. If ER/SOR is satisfied with the proposal of any other measures, ER/SOR to signify the agreement in writing on the measures to be implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER/SOR and confirm notification of the non-compliance in writing;</li> <li>2. Discuss with the ET and the IEC and propose measures to the IEC and the ER/SOR;</li> <li>3. Implement the agreed measures.</li> </ol>

<p>Limit Level</p>	<ol style="list-style-type: none"> <li>1. Repeat statistical data analysis to confirm findings;</li> <li>2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&amp;A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences;</li> <li>3. Identify source(s) of impact;</li> <li>4. Inform the IEC, ER/SOR and Contractor of findings;</li> <li>5. Check monitoring data;</li> <li>6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.</li> <li>7. If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor the necessity of additional dolphin monitoring and/or any other potential mitigation measures (e.g., consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activity etc.) and submit to IEC a proposal of additional dolphin monitoring and/or mitigation measures where necessary.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor;</li> <li>2. Discuss monitoring results and findings with the ET and the Contractor;</li> <li>3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.</li> <li>4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise ER/SOR of the results and findings accordingly.</li> <li>5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise ER/SOR the results and findings accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.</li> <li>2. If ER/SOR is satisfied with the proposals for additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by IEC, ER/SOR to signify the agreement in writing on such proposals and any other mitigation measures.</li> <li>3. Supervise the implementation of additional monitoring and/or any other mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER/SOR and confirm notification of the non-compliance in writing;</li> <li>2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures.</li> <li>3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary.</li> <li>4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.</li> </ol>
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## 10.7 Post-construction Monitoring for Ecology

- 10.7.1 Dolphin monitoring will be conducted twice a month in each survey area stated in Section 10.4.1 after completion of construction.
- 10.7.2 The dolphin monitoring will be conducted in the post-construction phase<sup>3</sup> at least for 2 year after completion of construction. Forty-eight survey events to be undertaken at a frequency of 2 per month over a period of 24 months should be conducted following cessation of the construction.
- 10.7.3 The data from impact monitoring should be compared with the pre-construction baseline findings. Any apparent differences in density among survey phases should be analysed for trends and the statistical power of the analysis to detect effects of the desired size should be tested. Statistical procedures shall be used for data comparison. A range of applicable statistical procedures exist (e.g., t-test, ANOVA and ANCOVA, etc.) and the ET shall propose the procedure to be applied as part of the impact and post-construction<sup>3</sup> dolphin monitoring programme design to be agreed with AFCD prior to the monitoring being undertaken.
- 10.7.4 Should dolphin sighting numbers, density or the distribution pattern in the construction or post-construction<sup>3</sup> phases be significantly different (taking into account naturally occurring alterations to distribution patterns such as due to seasonal change) to the pre-construction baseline activity, the ET should inform AFCD and investigate the possible causes of the change. Appropriate actions and a further monitoring should be recommended and additional mitigation measures should be implemented as necessary. Data should then be re-assessed and the need for any further monitoring established. The monitoring results should be made available to EPD, AFCD, ER and IEC within 2 weeks after the last survey day of the monitoring month.
- 10.7.5 Comparison of the impact and post-construction<sup>3</sup> dolphin monitoring with that of over the pre-construction baseline dolphin monitoring will allow the assessment of the overall efficacy of the project-specific mitigation measures through the implementation of an Action Plan detailed in the Table 10.2.

## 10.8 Event and Action Plan

- 10.8.1 The Action and Limit levels for Chinese White Dolphin Monitoring are defined in Table 10.3(a) and 10.3(b). Should non-compliance of the criteria occur, action in accordance with the Action Plan in Table 10.2 shall be carried out.
- 10.8.2 An action plan has been defined to indicate that should dolphin numbers be significantly different (taking into account naturally occurring alterations to distribution patterns such as due to seasonal change) to the baseline monitoring activity following the impact and post-construction<sup>3</sup> monitoring, the ET should inform AFCD and investigate the possible causes of the change. Appropriate actions and a further monitoring should be recommended and additional mitigation measures should be implemented as necessary. Data should then be re-assessed and the need for any further monitoring established. The action plan should be undertaken within a period of 1 month after a significant difference has been determined.
- 10.8.3 For the purpose of the EM&A works, the “significance” level which will trigger the action plan shall be proposed by the ET as part of the post-construction monitoring programme<sup>3</sup> design to be agreed with AFCD and EPD prior to the monitoring being undertaken.

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<sup>3</sup> This Contract involves impact monitoring of dolphins during construction phase only. The responsibility of post construction dolphin monitoring will be assigned to relevant contract by the Authority in the later stage of the Hong Kong-Zhuhai-Macao Bridge project.

**Table 10.3a) Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL):**

	North Lantau Social Cluster	
	NEL	NWL
Action Level	(STG < 70% of baseline) & (ANI < 70% of baseline)	(STG < 70% of baseline) & (ANI < 70% of baseline)
Limit Level	[(STG < 40% of baseline) & (ANI < 40% of baseline)] AND [(STG < 40% of baseline) & (ANI < 40% of baseline)]	

For North Lantau Social Cluster, action level will be trigger if either NEL or NWL fall below the criteria; limit level will be triggered if both NEL and NWL fall below the criteria.

**Table10.3(b) Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring**

	North Lantau Social Cluster	
	NEL	NWL
Action Level	(STG < 4.2) & (ANI < 15.5)	(STG < 6.9) & (ANI < 31.3)
Limit Level	[(STG < 2.4) & (ANI < 8.9)] AND [(STG < 3.9) & (ANI < 17.9)]	



## **11 FISHERY**

### **11.1 Summary**

- 11.1.1 The EIA report identified and assessed the potential impacts related to fisheries and marine culture.
- 11.1.2 The water quality monitoring and audit requirements are included in Section 9 Water Quality.
- 11.1.3 As mentioned in the EIA report, no further monitoring and audit for fisheries are required.

## **12 CULTURAL HERITAGE**

### **12.1 Summary**

- 12.1.1 The marine archaeology investigation (MAI) has concluded that there is no underwater cultural heritage within the study area. No adverse impact on marine archaeological is anticipated. Hence, further investigation or mitigation measure is not required.
- 12.1.2 The HKBCF is located in the waters to be north-east of the Airport. It would not have any impacts on known built heritage and archaeological site. Mitigation measure is not required for built heritage and terrestrial archaeology.

## **13 HAZARD TO LIFE**

### **13.1 Summary**

- 13.1.1 The HKBCF is a newly reclaimed site, it is anticipated that blasting work will not be required during construction of the HKBCF. Therefore no explosives QRA is required and hence no mitigation measure is required.

## 14 LANDSCAPE & VISUAL IMPACT

### 14.1 Introduction

14.1.1 The EIA has recommended landscape and visual mitigation measures to be undertaken during the construction phases for HKBCF and southern landfall of TMCLKL. This section outlines the monitoring and audit of these measures for HKBCF and southern landfall of TMCLKL.

### 14.2 Monitoring Details

14.2.1 The design, implementation and maintenance of landscape mitigation measures should be checked to ensure that any potential conflicts between the proposed landscape measures and any other works of the project would be resolved as early as practical without affecting the implementation of the mitigation measures.

**Table 14.1 Monitoring Programme**

Stage	Monitoring Task	Monitoring Report	Form of Approval	Frequency
Detailed Design	Checking of design works against the recommendations of the landscape and visual impact assessments within the EIA should be undertaken during detailed design phase and tender stage, to ensure that they fulfil the intention of the mitigation measures. Any changes to the design, including design changes on site should also be checked.	Not Required	Not Required	At the end of the Detailed Design Phase
Construction	Checking of the contractor's operations during the construction period.	Report on Contractor's compliance, by ET	Counter-signature of report by IEC	Weekly

Notes:

- Environmental Team (ET) – employed by the Contractor;

**Detailed Design Phase**

14.2.2 The mitigation measures, which are proposed in the EIA to mitigate the landscape and visual impacts, should be embodied into the detailed engineering design, landscape design drawings and contract documents. The Detailed Design should be checked during design stage and before tender stage by a Registered Landscape Architect to ensure that the measures are fully incorporated. Potential conflicts with civil engineering, geotechnical, structural, lighting, signage, drainage and underground utilities and operational requirements should be resolved as early as practical. Monitoring of design works against the recommendations of the landscape and visual impact assessments within the EIA should be undertaken when the designs are produced to ensure that they fulfill the intentions of mitigation measures.

14.2.3 The following mitigation measures are proposed to avoid and reduce the identified impacts:

- Minimize the footprint of project and that the quantity of landscape character units and landscape resources affected;
- Minimize temporary works areas for construction works; and
- Undertaking good site practices by applying hydroseeding on temporary stockpiles and reclamation areas.

14.2.4 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

14.2.5 The following mitigation measures should be monitored during construction phases:

**Table 14.2 Mitigation Measures to be monitored during Construction Phase**

	Description of Mitigation Measures
During Construction Phase	<p><u>Mitigate Landscape Impacts</u></p> <p>G1. Grass-hydroseed or sheeting bare soil surface and stock pile areas. /CM4.</p> <p>G9. Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt “natural-look” by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance “natural-look” of new coastline (see Figure 4 for details of mitigation measures for the new coastline as example).</p> <p>CM7. Ensure no run-off into water body adjacent to the Project Area.</p>
	<p><u>Mitigate Visual Impacts</u></p> <p>V1. Minimize time for construction activities during construction period.</p> <p>CM6. Control night-time lighting and glare by hooding all lights.</p>

14.2.6 An implementation programme will be prepared as required by TM-EIAO. Reference will be made to the ETWB TC(W) No. 2/2004 on Maintenance of Vegetation and Hard Landscape Features which defines the management and maintenance responsibilities for natural vegetation and landscape works, including both softworks and hardworks, and the authorities for tree preservation and felling. The format of the preliminary arrangement of implementation programme is listed below:

**Table 14.3 Proposed format for Preliminary Funding, Implementation, Management and Maintenance Proposal**

Mitigation items	Funding & Implementation unit(See Remark)	Maintenance unit(See Remark)
<i>During Construction</i>		
V1 and CM6	Project Proponent (i.e. HyD)	The Contractor
G1/CM4, G9 and CM7	Project Proponent (i.e. HyD)	HyD / LCSD

Note: The proposed mitigation measures and arrangements are tentative. The responsible parties are also tentative and subject to further agreements amongst the Government Departments.

### **Construction phase & Establishment Period**

- 14.2.7 The implementation of landscape construction works must be supervised by qualified Landscape Resident Site Staff (Registered Landscape Architect, as defined by the Landscape Architect's Registration Board or Professional Member of the Hong Kong Institute of Landscape Architects).
- 14.2.8 Measures to mitigate landscape and visual impacts during construction should be checked to ensure compliance with the intended aims of the measures.
- 14.2.9 The progress of the engineering works shall be regularly reviewed on site to identify the earliest practical opportunities for the landscape works to be undertaken.

### **Long Term Management (10 Years)**

- 14.2.10 N.A. (Not relevant to the Hong Kong Boundary Crossing Facilities – Reclamation Works)

### **14.3 Baseline Monitoring**

- 14.3.1 A one off survey shall be conducted prior to commencement of any construction works. A photographic record of the site at the time of the contractor's possession of the site shall be prepared by the Contractor and approved by the ER. The approved photographic record shall be submitted to the Project Proponent, ET, IEC and EPD for record.

### **14.4 Action Plan for Landscape and Visual Works**

**Table 14.4 Action Plan**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Conflicts occur	<ul style="list-style-type: none"> <li>Check Contractor's final design conforms to the requirements of EP and prepare checking report(s)</li> </ul>	<ul style="list-style-type: none"> <li>Check and endorse ET's report(s)</li> <li>Check and certify Contractor's proposed design</li> <li>Recommend remedial design if necessary</li> </ul>	<ul style="list-style-type: none"> <li>Under remedial design if necessary</li> </ul>	-
Non-conformity on one occasion	<ul style="list-style-type: none"> <li>Identify Source</li> <li>Inform IEC and</li> </ul>	<ul style="list-style-type: none"> <li>Check report</li> <li>Check</li> </ul>	<ul style="list-style-type: none"> <li>Notify Contractor</li> </ul>	<ul style="list-style-type: none"> <li>Amend working methods</li> </ul>

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	ER <ul style="list-style-type: none"> <li>• Discuss remedial actions with IEC, ER and Contractor</li> <li>• Monitor remedial actions until rectification has been completed</li> </ul>	Contractor's working method <ul style="list-style-type: none"> <li>• Discuss with ET and Contractor on possible remedial measures</li> <li>• Advise ER on effectiveness of proposed remedial measures.</li> <li>• Check implementation of remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure remedial measures are properly implemented</li> </ul>	<ul style="list-style-type: none"> <li>• Rectify damage and undertake any necessary replacement</li> </ul>
Repeated Non-conformity	<ul style="list-style-type: none"> <li>• Identify Source</li> <li>• Inform IEC and ER</li> <li>• Increase monitoring frequency</li> <li>• Discuss remedial actions with IEC, ER and Contractor</li> <li>• Monitor remedial actions until rectification has been completed</li> <li>• If non-conformity stops, cease additional monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Check monitoring report</li> <li>• Check Contractor's working method</li> <li>• Discuss with ET and Contractor on possible remedial measures</li> <li>• Advise ER on effectiveness of proposed remedial measures</li> <li>• Supervise implementation of remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Notify Contractor</li> <li>• Ensure remedial measures are properly implemented</li> </ul>	<ul style="list-style-type: none"> <li>• Amend working methods</li> <li>• Rectify damage and undertake any necessary replacement</li> </ul>

## **15 SITE ENVIRONMENTAL AUDIT**

### **15.1 Site Inspection**

- 15.1.1 Site inspection provides a direct means to initiate and enforce specified environmental protection and pollution control measures. These shall be undertaken routinely to inspect construction activities in order to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented. Site inspection is one of the most effective tools to enforce the environmental protection requirements at the works area.
- 15.1.2 The ET Leader shall be responsible for formulating the environmental site inspection, the deficiency and action reporting system, and for carrying out the site inspection works. Within 21 days of the construction contract commencement, he shall submit a proposal for site inspection and deficiency and action reporting procedures to the Contractor for agreement, and to the ER for approval. The ET's proposal for rectification would be made known to the IEC.
- 15.1.3 Regular site inspections shall be carried out at least once per week. The areas of inspection shall not be limited to the environmental situation, pollution control and mitigation measures within the site. It should also review the environmental situations outside the works area which is likely to be affected, directly or indirectly, by the site activities. The following information should be made reference in conducting the inspection:
- (i) EIA recommendations on environmental protection and pollution control mitigation measures;
  - (ii) works progress and programme;
  - (iii) individual works methodology proposals (which shall include proposal on associated pollution control measures);
  - (iv) contract specifications on environmental protection;
  - (v) relevant environmental protection and pollution control laws; and
  - (vi) previous site inspection results.
- 15.1.4 The Contractor shall keep the ET Leader updated with all relevant information on the construction contract necessary for him to carry out the site inspections. Inspection results and associated recommendations for improvements to the environmental protection and pollution control works shall be submitted to the IEC and the Contractor within 1 working day. The Contractor shall follow the procedures and time-frame as stipulated in the environmental site inspection, and the deficiency and action reporting system formulated by the ET Leader, to report on any remedial measures subsequent to the site inspections.
- 15.1.5 Ad-hoc site inspections shall also be carried out if significant environmental problems are identified. Inspections may also be required subsequent to receipt of an environmental complaint, or as part of the investigation work, as specified in the Action Plan for environmental monitoring and audit.

### **15.2 Compliance with Legal and Contractual Requirements**

- 15.2.1 There are contractual environmental protection and pollution control requirements as well as environmental protection and pollution control laws in Hong Kong with which construction activities must comply.
- 15.2.2 In order that the works comply with the contractual requirements, all works method statements submitted by the Contractor to the ER for approval shall be sent to the ET Leader for vetting to ensure sufficient environmental protection and pollution control measures have been included. The implementation schedule of mitigation measures is summarised in Appendix B.
- 15.2.3 The ET Leader shall also review the progress and programme of the works to check that relevant environmental laws have not been violated, and that any foreseeable potential for violating laws can be prevented.



- 15.2.4 The Contractor shall regularly copy relevant documents to the ET Leader so that checking can be carried out. The document shall at least include the updated Works Progress Reports, updated Works Programme, any application letters for different licence / permits under the environmental protection laws, and copies of all valid licences / permits. The site diary shall also be available for the ET Leader's inspection upon his request.
- 15.2.5 After reviewing the document, the ET Leader shall advise the IEC and Contractor of any non-compliance with contractual and legislative requirements on environmental protection and pollution control for them to take follow-up actions. If the ET Leader's review concludes that the current status on licence / permit application and any environmental protection and pollution control preparation works may result in potential violation of environmental protection and pollution control requirements, he shall also advise the Contractor and the ER accordingly.
- 15.2.6 Upon receipt of the advice, the Contractor shall undertake immediate actions to correct the situation. The ER shall follow up to ensure that appropriate action has been taken in order to satisfy contractual and legal requirements.

### 15.3 Environmental Complaints

- 15.3.1 Complaints shall be referred to the ET Leader for action. The ET Leader shall undertake the following procedures upon receipt of any complaint:
- (i) log complaint and date of receipt onto the complaint database and inform the IEC immediately;
  - (ii) investigate the complaint to determine its validity, and assess whether the source of the problem is due to works activities;
  - (iii) identify mitigation measures in consultation with the IEC if a complaint is valid and due to works;
  - (iv) advise the Contractor if mitigation measures are required;
  - (v) review the Contractor's response to identified mitigation measures, and the updated situation;
  - (vi) if the complaint is transferred from the EPD, submit interim report to the EPD on status of the complaint investigation and follow-up action within the time frame assigned by the EPD;
  - (vii) undertake additional monitoring and audit to verify the situation if necessary, and review that circumstances leading to the complaint do not recur;
  - (viii) report investigation results and subsequent actions to complainant (if the source of complaint is EPD, the results should be reported within the timeframe assigned by the EPD); and
  - (ix) record the complaint, investigation, the subsequent actions and the results in the monthly EM&A reports.

## 16 REPORTING

### 16.1 General

- 16.1.1 Reports can be provided in an electronic medium upon agreeing the format with the ER and EPD. This would enable a transition from a paper / historic and reactive approach to an electronic / real time proactive approach. All the monitoring data (baseline and impact) shall also be submitted on diskettes or other approved media. The formats for air quality, noise and water quality monitoring data to be submitted shall be separately agreed.
- 16.1.2 The ET is responsible for establishing and maintaining a dedicated website throughout the entire construction period for publishing the all the relevant environmental monitoring data (including but not limited to the baseline and impact monitoring). The ET shall propose the format and functionality of the website for agreement with the ER and IEC prior to publishing of data. Once the monitoring data are available (e.g. noise, dust, water quality etc) and vetted by the IEC, the ET is responsible to upload the relevant data to the dedicated website.
- 16.1.3 Types of reports that the ET Leader shall prepare and submit include baseline monitoring report, monthly EM&A report, quarterly EM&A summary report and final EM&A review report. In accordance with Annex 21 of the EIAO-TM, a copy of the monthly, quarterly summary and final review EM&A reports shall be made available to the Director of Environmental Protection.

### 16.2 Baseline Monitoring Report

- 16.2.1 The ET Leader shall prepare and submit a Baseline Environmental Monitoring Report within 10 working days of completion of the baseline monitoring. Copies of the Baseline Environmental Monitoring Report shall be submitted to the Contractor, the IEC, the ER and EPD. The ET Leader shall liaise with the relevant parties on the exact number of copies they require. The report format and baseline monitoring data format shall be agreed with the EPD prior to submission.
- 16.2.2 The baseline monitoring report shall include at least the following:
- (i) up to half a page executive summary;
  - (ii) brief project background information;
  - (iii) drawings showing locations of the baseline monitoring stations;
  - (iv) monitoring results (in both hard and diskette copies) together with the following information:
    - monitoring methodology;
    - name of laboratory and types of equipment used and calibration details;
    - parameters monitored;
    - monitoring locations;
    - monitoring date, time, frequency and duration; and
    - quality assurance (QA) / quality control (QC) results and detection limits;
  - (v) details of influencing factors, including:
    - major activities, if any, being carried out on the site during the period;
    - weather conditions during the period; and
    - other factors which might affect results;
  - (vi) determination of the Action and Limit Levels for each monitoring parameter and statistical analysis of the baseline data, the analysis shall conclude if there is any significant difference between control and impact stations for the parameters monitored;
  - (vii) revisions for inclusion in the Contract Specific EM&A Manual; and
  - (viii) comments, recommendations and conclusions.

### 16.3 Monthly EM&A Reports

- 16.3.1 The results and findings of all EM&A work required in the Manual shall be recorded in the monthly EM&A reports prepared by the ET Leader. The EM&A report shall be prepared and submitted within 10 working days of the end of each reporting month, with the first report due the month after construction commences. Each monthly EM&A report shall be submitted to the following parties: the Contractor, the IEC, the ER and EPD. Before submission of the first EM&A report, the ET Leader shall liaise with the parties on the required number of copies and format of the monthly reports in both hard copy and electronic medium.
- 16.3.2 The ET leader shall review the number and location of monitoring stations and parameters every six months, or on as needed basis, in order to cater for any changes in the surrounding environment and the nature of works in progress.

#### **First Monthly EM&A Report**

- 16.3.3 The first monthly EM&A report shall include at least the following:
- (i) Executive summary (1-2 pages):
    - breaches of Action and Limit levels;
    - complaint log;
    - notifications of any summons and successful prosecutions;
    - reporting changes; and
    - future key issues.
  - (ii) Basic project information:
    - project organisation including key personnel contact names and telephone numbers;
    - programme;
    - management structure, and
    - works undertaken during the month.
  - (iii) Environmental status:
    - works undertaken during the month with illustrations (such as location of works, daily excavation rate, etc); and
    - drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations (with co-ordinates of the monitoring locations).
  - (iv) A brief summary of EM&A requirements including:
    - all monitoring parameters;
    - environmental quality performance limits (Action and Limit levels);
    - Event-Action Plans;
    - environmental mitigation measures, as recommended in the Project EIA study final reports; and
    - environmental requirements in contract documents.
  - (v) Implementation status:
    - advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA.
  - (vi) Monitoring results (in both hard and diskette copies) together with the following information:
    - monitoring methodology;
    - name of laboratory and types of equipment used and calibration details;
    - parameters monitored;

- monitoring locations;
  - monitoring date, time, frequency, and duration;
  - weather conditions during the period;
  - any other factors which might affect the monitoring results; and
  - QA/QC results and detection limits.
- (vii) Report on non-compliance, complaints, and notifications of summons and successful prosecutions:
- record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
  - record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
  - record of all notification of summons and successful prosecutions for breaches of current environmental protection / pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
  - review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
  - description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.
- (viii) Others
- an account of the future key issues as reviewed from the works programme and work method statements;
  - advice on the solid and liquid waste management status; and
  - comments (for examples, effectiveness and efficiency of the mitigation measures), recommendations (for example, any improvement in the EM&A programme) and conclusions.

#### **Subsequent EM&A Reports**

16.3.4 Subsequent monthly EM&A reports shall include the following:

- (i) Executive summary (1 - 2 pages):
- breaches of Action and Limit levels;
  - complaints log;
  - notifications of any summons and successful prosecutions;
  - reporting changes; and
  - future key issues.
- (ii) Basic project information:
- project organisation including key personnel contact names and telephone numbers;
  - programme;
  - management structure; and
  - work undertaken during the month.
- (iii) Environmental status:
- works undertaken during the month with illustrations (such as location of works, daily excavation rate, etc.); and
  - drawing showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations.

- (iv) Implementation status:
- advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA.
- (v) Monitoring results (in both hard and diskette copies) together with the following information:
- monitoring methodology;
  - name of laboratory and types of equipment used and calibration details;
  - parameters monitored;
  - monitoring locations;
  - monitoring date, time, frequency, and duration;
  - weather conditions during the period;
  - any other factors which might affect the monitoring results; and
  - QA / QC results and detection limits.
- (vi) Report on non-compliance, complaints, and notifications of summons and successful prosecutions:
- record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
  - record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
  - record of all notification of summons and successful prosecutions for breaches of current environmental protection / pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
  - review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
  - description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.
- (vii) Others
- an account of the future key issues as reviewed from the works programme and work method statements;
  - advice on the solid and liquid waste management status; and
  - comments (for examples, effectiveness and efficiency of the mitigation measures), recommendations (for example, any improvement in the EM&A programme) and conclusions.
- (viii) Appendices
- Action and Limit levels;
  - graphical plots of trends of monitored parameters at key stations over the past four reporting periods for representative monitoring stations annotated against the following:
    - a) major activities being carried out on site during the period;
    - b) weather conditions during the period; and
    - c) any other factors that might affect the monitoring results.
  - monitoring schedule for the present and next reporting period;
  - cumulative statistics on complaints, notifications of summons and successful prosecutions; and
  - outstanding issues and deficiencies.

## 16.4 Quarterly EM&A Summary Reports

16.4.1 A quarterly EM&A summary report of around 5 pages shall be produced and shall contain at least the following information:

- (i) Executive summary (1 - 2 pages);
- (ii) Basic project information including a synopsis of the project organisation, programme, contacts of key management, and a synopsis of works undertaken during the quarter;
- (iii) A brief summary of EM&A requirements including:
  - monitoring parameters;
  - environmental quality performance limits (Action and Limit levels); and
  - environmental mitigation measures, as recommended in the Project EIA Final Reports;
- (iv) Advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA Final Report, summarised in the updated implementation schedule;
- (v) Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
- (vi) Graphical plots of any trends in monitored parameters over the past four months (the last month of the previous quarter and the present quarter) for representative monitoring stations annotated against:
  - the major activities being carried out on site during the period;
  - weather conditions during the period; and
  - any other factors which might affect the monitoring results;
- (vii) Advice on the solid and liquid waste management status;
- (viii) A summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- (ix) A brief review of the reasons for and the implications of any non-compliance, including a review of pollution sources and working procedures;
- (x) A summary description of actions taken in the event of non-compliance and any follow-up procedures related to any earlier non-compliance;
- (xi) A summarised record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;
- (xii) Comments (for examples, a review of the effectiveness and efficiency of the mitigation measures and the performance of the environmental management system, that is, of the overall EM&A programme); recommendations (for example, any improvement in the EM&A programme) and conclusions for the quarter; and
- (xiii) Project Proponent's contacts and any hotline telephone number for the public to make enquiries.

## 16.5 Annual/Final EM&A Review Reports

16.5.1 The final EM&A report should contain at least the following information:

- (i) Executive summary (1 - 2 pages);
- (ii) Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
- (iii) Basic project information including a synopsis of the project organisation, contacts of key management, and a synopsis of work undertaken during the course of the project or past twelve months;
- (iv) A brief summary of EM&A requirements including:
  - environmental mitigation measures, as recommended in the Project EIA Reports;

- environmental impact hypotheses tested;
  - environmental quality performance limits (Action and Limit levels);
  - all monitoring parameters;
  - Event-Action Plans;
- (v) A summary of the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA Report, summarised in the updated implementation schedule;
- (vi) Graphical plots and the statistical analysis of the trends of monitored parameters over the course of the project, including the post-project monitoring (or the past twelve months for annual reports) for all monitoring stations annotated against:
- the major activities being carried out on site during the period;
  - weather conditions during the period; and
  - any other factors which might affect the monitoring results;
  - The return of ambient environmental conditions in comparison with baseline data.
- (vii) A summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- (viii) A review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures as appropriate;
- (ix) A description of the actions taken in the event of non-compliance;
- (x) A summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;
- (xi) A summary record of notifications of summons and successful prosecutions for breaches of the current environmental protection / pollution control legislation, locations and nature of the breaches, investigation follow-up actions taken and results;
- (xii) A comparison of the EM&A data with the EIA predictions with annotations and explanations for any discrepancies, including a review of the validity of EIA predictions and identification of shortcomings in the EIA recommendations.
- (xiii) A review of the monitoring methodology adopted and with the benefit of hindsight, comment on its effectiveness, including cost effectiveness
- (xiv) A review of success of the EM&A programme, including a review of the effectiveness and efficiency of the mitigation measures, and recommendations for any improvements in the EM&A programme.
- (xv) A clear cut statement on the environmental acceptability of the project with reference to specific impact hypotheses and a conclusion to state the return to ambient and/or the predicted scenario as the EIA findings.

## **16.6 Data Keeping**

- 16.6.1 No site-based documents (such as monitoring field records, laboratory analysis records, site inspection forms, etc.) are required to be included in the monthly EM&A reports. However, any such document shall be well kept by the ET Leader and be ready for inspection upon request. All relevant information shall be clearly and systematically recorded in the document. Monitoring data shall also be recorded in magnetic media form, and the software copy must be available upon request. Data format shall be agreed with EPD. All documents and data shall be kept for at least one year following completion of the construction contract.

## **16.7 Interim Notifications of Environmental Quality Limit Exceedances**

- 16.7.1 With reference to the Event and Action Plan, when the environmental quality performance limits are exceeded, the ET Leader shall immediately notify the IEC and EPD, as appropriate. The notification shall be followed up with advice to IEC and EPD on the results of the investigation, proposed actions

and success of the actions taken, with any necessary follow-up proposals. A sample template for the interim notifications is presented in Appendix F.